WATER QUALITY MONITORING PLAN
WHITE STREET LANDFILL
PHASE I AND II AREAS
WHITE STREET
GREENSBORO, NORTH CAROLINA

S&ME Project No. 1584-98-081

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I hereby certify this 14th day of December, 2007, that this report was prepared by me or under my direct supervision.

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WATER QUALITY MONITORING PLAN

1. PURPOSE AND INTENT

The purpose of this plan is to provide a program which describes the collection and evaluation of ground water monitoring samples collected from compliance wells installed within the uppermost aquifer adjacent to the Phase I (closed) and Phase II (closed MSW and active C&D) portions of the White Street Landfill in Greensboro, North Carolina, and surface water quality samples from the same vicinity. The intent of this plan is to provide detection monitoring throughout the active life and post-closure care period at the White Street Landfill.

This plan was prepared in accordance with the rules codified under the North Carolina Solid Waste Management 15A NCAC 13B, Sections .1630 through .1637 under the guidance of a North Carolina Licensed Geologist. The water quality monitoring plan is effective in providing early detection of any release of hazardous constituents from the MSWLF unit to the uppermost aquifer, so as to be protective of public health and the environment.

2. DESCRIPTION OF PLAN COMPONENTS

This plan describes the basic field data collection and reporting requirements for the collection of ground water and surface water quality samples for the evaluation of site conditions relating to the disposal of solid waste at the above referenced facility. Sections of this plan describe the rationale behind background and downgradient well selection, selection of surface water sample locations, well purging and sampling techniques, surface water sampling techniques, decontamination procedures, ground water and surface water analytical parameters with quality assurance/quality control (QA/QC) requirements, and statistical analysis options, and reporting requirements.

3. DATA COLLECTION PROCEDURES

3.1 Water Quality Sampling Locations

The following sections discuss the general rationale used to select the upgradient (background) compliance wells and the downgradient (detection) compliance wells based on available geologic and hydrogeologic data. All well locations were selected on their basis to provide water quality data from the uppermost aquifer beneath the facility. The rationale for selection of surface water monitoring points is also discussed.

3.1.1 Background Wells

Using the historical water-table elevation data collected during multiple ground water monitoring events at the facility, background compliance wells were selected on the basis of hydraulic position in relation to the solid waste management units. Wells hydraulically "upgradient" of the unit were selected first. Existing ground-water monitoring well MW-13 fit this scenario for Phase I while existing monitor well MW-14 fit this scenario for Phase II. **Tables 1a and 1b** summarize the existing background monitoring wells for the Phase I and Phase II portions of the landfill, respectively, and their estimated distances

from their respective compliance boundaries. The location of these wells can be seen on **Figures 1 and 2** located in **Appendix II**.

3.1.2 Downgradient (Detection) Wells

The hydrogeologic and geologic characteristics of the facility and surrounding land, and the quantity, quality, and direction of ground water flow, were evaluated to determine the appropriate selection of downgradient (detection) wells. In addition to the criteria above, the distance of each proposed well relative to the waste unit (less than 250 feet) and the boundary of the property (50 feet or greater) were also considered. **Tables 1a and 1b** summarize the downgradient (detection) monitoring wells for the Phase I and Phase II portions of the landfill, respectively, and their estimated distances from their respective compliance boundaries. The location of these wells can be seen on **Figures 1 and 2** located in **Appendix II**. Soil boring logs and monitoring well construction record drawings for these wells are included in **Appendix III.**

3.1.3 Surface Water Sample Locations

The locations of the five surface sample points are referenced on **Figures 1 and 2**. SW-2 is located on a southern tributary of North Buffalo Creek several hundred feet before it joins the main creek west of the landfill entrance. SW-3 is located on North Buffalo Creek just below the North Buffalo Creek Wastewater Treatment Plant outfall, upstream of the landfill. SW-4 is downstream of the landfill at the U.S.G.S. gauging station on North Buffalo Creek. Finally, SW-5 is located downstream of the landfill on another southern tributary of North Buffalo Creek.

3.2 Monitoring Well Data Collection

The following data will be collected and reported during the period of performance for this water quality plan. A brief discussion on the collection of and analysis of these data is provided in the sections to follow. Field conditions (e.g., temperature, weather conditions, purge start/stop times, sample collection start/stop times, etc.) during each sampling event will be recorded on Daily Field Report forms (**Attachment 1**), or equivalent. The primary objectives of groundwater sampling are (1) to obtain a representative groundwater sample and (2), to prevent the sample from being altered or contaminated during withdrawal from the well or during sample preparation.

The City of Greensboro has elected to use dedicated sampling pumps to collect groundwater samples from monitor wells around the landfill. With proper techniques for low-flow purging and sampling, the pumps offer the potential of obtaining groundwater samples with lower turbidity than may be obtainable with bailers. However, the City reserves the right to use conventional sampling methods (dedicated bailer sampling) to sample the wells in the event of pump malfunction, or as may be required by site specific conditions.

The following sections discuss specifications and procedures applicable to both sampling methods. Detailed discussion of proper sampling procedures for each method can be found in relevant guidance documents prepared by the North Carolina Division of Waste

Management Solid Waste Management Section, or the United States Environmental Protection Agency (USEPA).

3.2.1 Equipment Specifications

It is the intent of these specifications that the sampling pump or the bailer be constructed of inert materials. Sample collection equipment should not alter the analyte concentrations, cause loss of analytes via sorption, or result in analytes desorption, degradation or corrosion of the pump components. Sampling equipment should cause minimal sample agitation and should be selected to minimize sample contact with the atmosphere during sample transfer. The following section discusses the specifications of the dedicated pumps and bailers.

3.2.1.1 Dedicated Pneumatic Sampling Pumps

Dedicated sampling pumps shall be all-pneumatic, bladder pumps driven by a portable air controller supplied with compressed air from a portable oil less air compressor or compressed air bottle. Pump effluent will pass through a portable flow-through cell and water analyzer which will monitor temperature, pH, conductivity, oxidation reduction potential (ORP), and dissolved oxygen to indicate when stabilization has occurred.

The sampling pump shall be a positive gas displacement bladder pump. The pump shall be constructed such that no gas or liquid is introduced into the well during the pumping operation. The pump shall be constructed of 316 stainless steel with a Teflon bladder. Bladders shall be field-replaceable and warranted for a period of 10 years. Bladder clamps shall also be constructed of 316 stainless steel. Pumps will be equipped with a screen having an opening not exceeding 0.012 inches. Sample pumps shall employ self polishing hard seat internal check valves.

The manufacturer shall warrant all pumps to be of new construction and shall certify all pumps and screens to be free of all EPA Method 601, 602, base neutral, and acid extractable contaminants. Certification and copies of the analytical reports with test batch numbers will be provided with each pump. Pump airline and discharge tubing shall be of new material, sized to match fittings supplied with each pump. The tubing bundle will consist of polyethylene air supply line heat bonded to a Teflon-lined polyethylene water supply line. The sample discharge tube shall provide a separate flow path without exposure to pump drive air and shall assure that discharge from the pump contacts only the Teflon inner tubing. The manufacturer shall certify that only virgin PTFE (Teflon) has been used in the manufacture of the inner tubing.

The pump air supply line and discharge tubing shall be attached to a well head assembly that will allow attachment of the air supply line to the well head with use of a quick - connect fitting. The well head assembly shall have an opening to allow measurement of water level with an electric water level probe. The discharge piping shall allow attachment of a Teflon elbow (QED part number 34485 or equivalent) to facilitate collection of the sample.

The air compressor shall be portable, gasoline powered, of an oilless design to prevent potential contamination to the sample in the event of malfunction and capable of supplying air to the controller at a minimum of 4.3 SCFM at 100 psi. The air compressor shall be supplied with a minimum of 40 feet of air line to allow operation of the gasoline engine downwind of the well during sampling.

The controller shall be capable of regulating both pressure and duration of bladder inflation and deflation cycles to allow optimum pump performance. A pause feature shall be provided to allow manual discharging and filling of sample during sample collection.

3.2.1.2 Manual Sampling Equipment

Manual sampling will be performed using Teflon bailers previously cleaned in a laboratory in accordance with procedures from the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities. Each bailer shall be cleaned, air-dried, and wrapped in aluminum foil in the laboratory prior to shipment to the field. Following sampling, the bailers shall be returned to the laboratory for cleaning and storage. A separate laboratory cleaned bailer is required for each monitoring well. Field cleaning of sampling bailers will not be allowed.

The bailer line should consist of either (1) Teflon coated wire (2) single strand stainless steel wire (3) other monofilament line or (4) nylon rope. In order to avoid cross-contamination, new bailer should be used at each well, for each sampling event.

3.2.2 Ground Water Level Data Measurements

Prior to purging of each well for water quality sample collection, static water level (and total well depth) will be measured to the nearest ±0.01 foot using an electronic water level probe and recorded on a Daily Field Report form, or equivalent. The water level probe will be decontaminated prior to, and between, each use by washing in a non-phosphate laboratory detergent (Liquinox or equivalent) wash, followed by a distilled water rinse. Each measurement will be made from a reference point established on the inside of the top of the PVC well casing. The elevation at the top of each well casing will be established by a North Carolina Registered Land Surveyor (RLS) to within ±0.01 foot. The horizontal position of each well will be established using North Carolina Plane Coordinates.

These data will be used to calculate the volume of standing water in each well and will provide information concerning well integrity (e.g., identify the presence of excessive siltation, casing breaches).

3.2.3 Well Evacuation

Because the standing water in the well may not represent in-situ groundwater quality, stagnant water should be removed from the well and filter pack prior to sampling. The evacuation (purging) procedure should ensure that the samples collected from the well are representative of groundwater quality in the vicinity of the well. In general, evacuation should be continued until certain geochemical parameters stabilize. Practice has demonstrated that these parameters usually stabilize with manual bailing of two to three

well volumes. By using low-flow pumping rates during well evacuation, stabilized conditions can be obtained with removal of less than 1 well volume.

3.2.3.1 Low-Flow Well Evacuation With Dedicated Pumps

Purging should be performed by removing water from the well at a flow rate as close to actual groundwater flow rate. If this determination is impractical at the time, a default purging rate of around 100 ml. per minute should be used. The purge rate should be low enough that recharge water does not become overly agitated or to lessen the draw of colloids into the well bore. Purging should be continued until field measurements of pH, conductivity, turbidity[1], oxidation-reduction potential (ORP), and dissolved oxygen[2] in-line measurements have stabilized to within approximate 10 percent over at least 3 consecutive measurements over time.

3.2.3.2 Well Evacuation Techniques Using a Bailer

Determination of the quantity of water to be bailed from each well will be made by calculating the volume of water in the well. This quantity can be made by subtracting the depth to the water surface from the total depth of the well as measured from the top of the well casing, and multiplying the difference by the cross-sectional area inside the well casing. For example, a 2-inch diameter (I.D.) pipe (Schedule 40) has 0.1632 gallons per foot of pipe length. Therefore, five times the volume of a 2-inch diameter well having a seven-foot water column would be equal to 5.7 gallons (0.1632 gal/ft x 7 ft x5 volumes). For moderate to high yield wells, a minimum of 3 to 5 times the volume of water standing in the well will be removed prior to sampling. For low yield wells, a minimum of 1.5 times the well volume will be removed if evacuated to dryness.

During manual purging, the bailer will be slowly lowered into the water column until full, the slowly retrieved from the well. The quantity of water removed from the well can be gauged by filling a calibrated bucket. Insertion of the bailer into the water column should be performed gently to minimize turbidity that results from redevelopment of the well. The bailer should not contact the ground surface or the container during well purging.

3.2.4 Sample Collection

It is desirable to have the analytical laboratory prepare and supply the sample containers in a protective cooler or transpack. Delivery of the empty containers by the laboratory to the sampler will be noted on the Chain of Custody. The same Chain of Custody will remain with the containers until they are delivered to the laboratory for testing.

A complete set of precleaned and prelabeled sample bottles will be removed from the cooler, prior to lowering the bailer in the well, or turning on the pump to collect the sample. Once collected, a portion of the sample from the bailer or pump (for each well) will be transferred into a fresh container. Preservatives will be added as necessary (in accordance with EPA Methods SW-846) to the sample bottles either by the laboratory or in the field immediately prior to sampling. One trip blank prepared by the laboratory will

[1] When turbidity is greater than 10 NTUs

[2] When final dissolved oxygen concentrations are less than 1 mg/L, the stabilization criteria will be $\pm$ 0.2 mg/L.

be analyzed each event. Equipment blanks are not recommended when the dedicated pumps are used for well evacuation and sampling. An equipment blank will be used when wells are evacuated and sampled using bailers.

Because water samples are analyzed for various parameters, several types of containers are required. The sample collection will proceed as follows: volatile organic compounds (VOCs) will be collected first in 40 ml glass vials with Teflon caps. The vials will be filled completely with no headspace remaining. Samples to be analyzed for inorganic constituents (metals) will be collected next. The containers are usually plastic cubes or bottles that have acid placed in the container as a preservative. These containers should not be rinsed prior to sampling.

If organic contamination is suspected, additional samples may be analyzed for semi-volatiles. Semi-volatiles, if required, will be collected following the inorganic compounds. Generally, the semi-volatiles are collected in a 1- liter amber bottle. Water samples to be analyzed for radiological parameters will be collected next, followed by bacteriological parameters. The radiological samples will be collected in 1 – liter bottles and the bacteriological samples in 120 – ml plastic bottles containing sodium thiosulfate as a preservative.

After transferring the sample to the container, it will be sealed and placed in chilled cooler or transpack pending completion of the sampling event and delivery to the laboratory. After completion of sampling at each well location, the well will be capped and secured. The samples will be secured in the coolers, or transpacks, and shipped or delivered to the laboratory as soon as practical.

3.2.4.1 Sample Collection With Dedicated Pumps

Following stabilization of field parameters, samples should be collected directly from the discharge port of the pump tubing, prior to passing through the flow-through cell. The purging pumping rate should be maintained or slightly reduced for sampling. Flow rates should be low enough to prevent aeration of the samples. For the volatile organic containers, the vials should be filled so that there are no air bubbles in the sample. There should be no headspace remaining in the vial after sample collection.

All sample containers will be labeled with well I.D. number, sample date, sample time, sampler initials, and the parameters in which to be analyzed. Each sample will be placed on ice for transport to a North Carolina Certified (15A NCAC 2H .0800) Laboratory for analysis. A Chain of Custody (see Attachment 2) will accompany the samples to the laboratory. **Table 2** summarizes the various Appendix I and II analytical parameters with their recommended sample container(s), preservatives, minimum sample volume, and maximum holding times.

3.2.4.2 Sample Collection with Bailers

Ground water samples will be collected within 24 hours of purging. Samples will be collected using either disposable Teflon® bailers or decontaminated (non-dedicated) Teflon® bailers. If disposable Teflon® bailers are used, they will be certified to have been

cleaned according to EPA protocol. This certification will accompany the well sampling and analysis data. If non-dedicated bailers are used, they shall be laboratory decontaminated prior to each use, in accordance with the decontamination procedures outlined in Section 3.3 of this document. New nylon cord and sampling gloves will be used at each new well location during sampling. All sampling materials not to be reused (e.g. surgical gloves, nylon cord, disposable Teflon® bailers) will be properly disposed of.

Ground water samples will be collected in the order of sensitivity to volatilization as follows:

- Volatile Organic Compounds (VOCs)
- Semi-Volatile Organic Compounds
- Total Metals
- Cations and Anions (including pH, Temperature, and Specific Conductance)

All samples for total metals analysis will be collected unfiltered. Volatile organics will be collected in 40 ml vials without headspace (i.e. no air bubbles). Bailers will be gently lowered to the water table so as not to agitate the ground water to be sampled.

All sample containers will be labeled with appropriate well ID number, sample date, sample time, sampler initials, and the parameters for which to be analyzed. Each sample will be placed immediately on ice for transport to a North Carolina DEM Certified (15A NCAC 2H .0800) Laboratory for ground water analysis. A Chain-of-Custody Record (see Attachment 2) will accompany the samples to the laboratory. **Table 2** summarizes the various Appendix I and II analytical parameters with their recommended sample container(s), preservative, minimum sample volume, and maximum holding times.

3.2.5 Surface Water Sampling Procedures

Surface water samples will be collected at the designated locations using the following procedures.

1. Gently lower the sample container into the water and rinse the container once prior to sample collection (unless a pre-measured amount of a preservative has been added).
2. Submerge the container (mouth down) below the water level and orient the mouth of the container towards the current at a depth of approximately six inches below the surface (do not breach the surface with the mouth of the container).
3. Lift the container from the water and secure the lid on the container. Volatile organics will be collected in 40 ml vials without headspace (i.e. no air bubbles).

During times of low stream flow, the container will be slowly moved side to side during filling. If water levels in the stream are too low to facilitate submerging the container, a small pool will be created and allowed to fill with water prior to sample collection (after settlement of suspended sediment). New surgical gloves will be worn for both the upstream (background) and downstream (detection) sampling events.

3.3 Decontamination Procedures

All non-dedicated sampling and data collection equipment will be decontaminated prior to each use, except as noted elsewhere in this plan, in accordance with the following procedures:

1. Tap water and non-phosphate laboratory detergent (Liquinox or equivalent) wash.
2. Tap water rinse.
3. 10% nitric acid rinse (delete this step for stainless steel item decon).
4. Rinse with deionized or distilled water.
5. Rinse with high grade isopropanol and allow to air dry.
6. Wrap with aluminum foil, if necessary, to prevent contamination during storage or transport.

3.4 Sample Parameters and Frequency

3.4.1 Ground Water Analytical Methods

The ground-water samples collected from the background and downgradient compliance wells at the Phase I portion of the landfill will be analyzed, at a minimum, for the constituents listed in the current Solid Waste Section requirements for sampling at Closed Sanitary Landfills. **Table 3a** summarizes these constituents as well as the preferred analytical method and Solid Waste Section Limit (SWSL) for each constituent. The ground-water samples collected from the background and downgradient compliance wells at the Phase II portion of the landfill will be analyzed, at a minimum, for the constituents listed in Appendix I of 40 CFR Part 258 entitled "Appendix I Constituents for Detection Monitoring." **Table 3b** summarizes Appendix I constituents as well as the preferred analytical method and Solid Waste Section Limit (SWLS) for each constituent.

3.4.2 Ground Water Sampling Frequency

Water quality samples will be collected on a semiannual basis for the life of the facility and the required post-closure monitoring period, except as required by the State.

3.4.3 Surface Water Analytical Methods

Surface water samples will be analyzed for the same analytical parameters (Appendix I list) as the Phase II ground-water quality samples.

3.4.4 Surface Water Sampling Frequency

Surface water samples will be collected on a semiannual basis for the life of the facility and the required post-closure monitoring period, except as required by the State.

3.4.5 QA/QC Procedures

One trip blank and one field blank will be taken during each sampling event to provide QA/QC evaluation of decontamination procedures, sampling handling procedures, and container shipping procedures. Trip blanks will be analyzed for volatile organics only, while equipment blanks will be analyzed for the full analytical suite. A duplicate water quality sample will be collected at least once a year from a selected monitoring well in order to check laboratory accuracy and QA/QC. Duplicate samples will be analyzed for the entire parameter list.

4. STATISTICAL EVALUATION OF MONITORING DATA

Five methods have been deemed acceptable by the NCDENR for the statistical evaluation of quality data from MSWLF facilities. Each of these tests have inherent advantages and disadvantages which render them more or less useful, depending on site and data set characteristics. Each method is briefly described below.

4.1 ANOVA (Parametric)

A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify specific sources of difference is the preferred method for a facility in the early stages of monitoring. The procedures include estimation and testing of the contrasts between the mean concentrations at each compliance well and those at the background well for each constituent.

Analysis-of-variance models are used to analyze the effects of an independent variable on a dependent variable. For monitoring data, a well or group of wells is the independent variable, and the aqueous concentration of certain constituents or of a specified contaminant or contaminants is the dependent variable. An analysis-of-variance can determine whether observed variations (differences) in aqueous concentrations between compliance and background wells are statistically significant. Use of analysis-of-variance models is appropriate in situations where background concentrations of specific constituents can be determined and the data are normally or log normally distributed. The constituents which are most appropriately evaluated using ANOVA approaches are naturally occurring metals and other geochemical parameters such as chloride, nitrate-N, and specific conductivity.

4.2 ANOVA (Non-Parametric)

A non-parametric analysis of variance (ANOVA) based on ranks followed by multiple comparison procedures to identify specific sources of difference can be used when the data are not normally distributed and cannot be transformed into a log-normal distribution. The procedure includes estimation and testing of the contrasts between the median of each compliance well and the background well for each constituent. This is a non-parametric procedure, which means that the laboratory values are not used; only the relative ranks are used.

4.3 Tolerance/Prediction Intervals

A tolerance interval or a prediction interval for each constituent is established from the background data. The concentration of each constituent in each compliance well is compared to set upper (or lower) tolerance or prediction limits.

Tolerance intervals define, with a specified probability, a range of values that are expected to contain a discrete percentage of the sample population (95%). Tolerance intervals are most appropriate for facilities which do not have high degrees of spatial variability between background and compliance well (e.g. areas underlain by homogeneous geologic materials such as granitic saprolite). With monitoring data, tolerance intervals can be constructed from concentrations found in the background well(s); these intervals are most often expressed as limits defined by the mean

background well concentration plus a population size determined multiple of the standard deviation of the mean. Possible contamination is indicated when concentrations of the specified constituent(s) at the compliance well(s) plot above the calculated tolerance interval limits.

Prediction intervals are intervals in which the user is confident at a specified percentage (95%) that the next observation will lie within the interval, and are based on the number of previous observations, the number of new measurements to be made, and the level of confidence that the user wishes to obtain. This method of statistical analysis can be used in both detection and compliance monitoring programs. The mean concentration and standard deviation are estimated from the background wells. In a compliance monitoring program, prediction intervals are constructed from compliance well concentrations beginning at the time the facility entered the compliance monitoring program. Each compliance well observation is tested to determine if it lies within the prediction interval. If it is greater (or lower) than the historical prediction limits, water quality has deteriorated to such a point that further action may be warranted.

4.4 Control Charts

A control chart approach provides control limits for each constituent which can be used to evaluate data produced by repeated sampling and analysis for each well in the monitoring network. This is an intrawell approach which does not involve a comparison between background and compliance wells. If any compliance well has a value or a sequence of values that lie outside of the control limits for that constituent, this may constitute statistically significant evidence of contamination.

Control charts are based on repeated independent sampling events conducted over time and may be developed for each constituent of interest. Different statistical measurements, such as the means, standard deviation and mean of replicate values at a point in time, are computed and plotted graphically together with upper predetermined limits on a chart in which the x-axis represents time. When a data point plots above these boundaries, the process is "out of control," and when it plots below the boundaries, the process is "in control." Control charts can be used to analyze the inherent statistical variation of monitoring data, to note aberrations, and to detect trends in the data. Further investigation of "out of control" points is necessary before taking any direct action. A control chart can be constructed for each constituent in each well to monitor the concentration of that constituent over time. New samples can be compared to the historical data from the well to determine if the well is "in or out of control." Control charts can also be used to evaluate monitoring data when these data have been adjusted and/or transformed as appropriate.

4.5 Other Statistical Methods

Other statistical methods submitted by the facility owner or operator and approved by the NCDEHNR may also be used. This could include development of confidence intervals in which data are compared to Federal or State established maximum contaminant limits (MCLs) or alternate contaminant limits (ACLs).

5. DATA REPORTING PROCEDURES

A report will be prepared which summarizes the sampling event, including field observations relating to the condition of the monitoring wells, well completion records and boring logs for background and downgradient wells, field observation data, laboratory data, statistical analysis, sampling methodologies, quality assurance and quality control data, information on flow direction, and calculations of flow rate.

5.1 Ground Water Direction and Flow Measurements

A water table elevation will be calculated for each monitoring well using surveyed top-of-casing elevations prepared by a North Carolina registered land surveyor. Calculated potentiometric surface elevations, for each sampling event, will be placed on a scaled base map of the facility beside each respective monitoring point and contoured to produce a water table potentiometric surface map depicting potential ground water flow direction(s) across the landfill.

5.2 Seepage (Pore Water) Calculations

In addition, estimated ground water flow velocities for each compliance monitoring point will be calculated for each water quality sampling event. Using the static water table potentiometric data, measured aquifer material porosity and hydraulic conductivity values developed during the site study, and the calculated hydraulic gradients at each monitoring well for the respective sample event, an estimated seepage (pore water) velocity at each monitoring well will be calculated to evaluate potential contaminant migration. **Table 4** lists the *in situ* hydraulic conductivity, total porosity, and effective porosity for each compliance monitoring well to be used in these calculations.

5.3 Detection Monitoring Reporting

The reporting of detection monitoring data will occur within 14 days from the completion of the statistical analysis of the ground-water quality analytical data. A report will be prepared which summarizes the sampling event, including field observations relating to the condition of the monitoring wells, field data, laboratory, statistical analysis, sampling methodologies, quality assurance and quality control data, information on ground-water flow direction, and calculations of ground-water flow rate.

5.4 Assessment Monitoring Program

In the event that a statistically significant increase in concentration over background levels is detected in one or more of the constituents listed in Appendix I (Phase II monitoring) or a violation of the North Carolina ground-water quality standards (15A NCAC 2L, .0202) has occurred, the current landfill detection monitoring program will be switched to an assessment monitoring program (in accordance with 15A NCAC 13B, .1634) within 90 days of one of either of the two conditions stated above.

5.4.1 Analytical Parameters and Sampling Frequency

As part of this assessment monitoring program, all previous detection monitoring wells will be sampled in accordance with this plan and analyzed for all constituents identified in Appendix II of 40 CFR Part 258 "Appendix II List of Hazardous Inorganic and Organic Constituents

5.4.2 Assessment Monitoring Reporting

Once the ground-water quality results from the initial or subsequent assessment sampling event(s) has been collected, a "Notice of Detection" of Appendix II constituents will be submitted to the Division within 14 days. Once assessment monitoring has been initiated, sampling will be required at a minimum twice each year. One sampling event will be for all Appendix II constituents, and one sampling event will be for Appendix I constituents plus previously detected Appendix II constituents. A report of each sampling event will be developed and submitted to the Division for placement into the operating record.

Depending upon the constituent(s) detected, deletions to the Appendix II list may be requested if evidence can be provided to show that these constituents are not expected to be in or derived from the waste contained within the solid waste unit.

5.4.3 Establishment and Reporting of Background Concentrations

If any constituent listed in Appendix II is detected in a downgradient monitoring well, four independent sampling events will be performed on all program wells to establish new background levels for the newly detected constituents.

Once the background concentration for the detected Appendix II constituents has been determined, these concentrations will be reported to the Division to obtain a determination to establish ground-water protection standards for all detected parameters.

5.4.4 Evaluation of Background and Assessment Data

During the course of assessment monitoring, the evaluation of background and assessment data can lead to the execution of several options depending on the results of the statistical analysis of the sampling data. These options include:

1. If during the performance of assessment monitoring, compliance well concentrations for Appendix II constituents are at or below the determined background concentrations for two (2) consecutive sampling events, a request will be made to the Division to return to detection monitoring.
2. In the event that the concentration of detected Appendix II constituents is above the established background levels but are below the Division established ground-water protection standards, assessment monitoring will be continued until such time that conditions under option 1 are achieved.
3. If one or more of the detected Appendix II constituents are above the approved ground-water protection standards (in any sampling event), a report shall be submitted to the Division within 14 days of this finding and a notice placed in the operating record.

5.5 Assessment of Corrective Measures

In order to characterize the nature and extent of the release causing the detection of Appendix II constituents, additional ground water monitoring wells may be installed, as necessary. At least one additional well installed at the facility boundary in the hydraulically-downgradient direction of contaminant migration should be sampled in

accordance with the assessment monitoring program. Landowners downgradient of the release shall be notified in the event that off-site migration is expected.

Within 90 days of discovering statistically significant levels of Appendix II constituents over the approved ground-water protection standards, an assessment of corrective measures will be implemented in accordance with Rule 15A NCAC 13B, .1635.

APPENDIX I

Tables

TABLE 1A

SUMMARY OF PROPOSED DETECTION MONITORING AND SAMPLING LOCATIONS

White Street Sanitary Landfill (Phase I)
Greensboro, North Carolina

SAMPLE ID NUMBER	SAMPLE TYPE	INTERVAL MONITORED	SAMPLE LOCATION AND POSITION		DETECTION MONITORING FUNCTION
			Distance and Direction From Waste Cell Boundary	Hydrogeologic Position	
I-1	Ground Water	Uppermost Aquifer	30 Feet West	Lateral	Provide Water Level and Quality Data
I-2	Ground Water	Uppermost Aquifer	5 Feet West	Lateral	Provide Water Level and Quality Data
I-3	Ground Water	Uppermost Aquifer	25 Feet West-Northwest	Downgradient	Provide Water Level and Quality Data
I-4	Ground Water	Uppermost Aquifer	25 Feet North	Downgradient	Provide Water Level and Quality Data
MW-13	Ground Water	Uppermost Aquifer	2,650 Feet Southwest	Upgradient	Provide Background Water Quality Data

All distances from waste cell boundary are approximates based on measurements taken from the scaled base map Drawing D-1.

TABLE 1B

SUMMARY OF PROPOSED DETECTION MONITORING AND SAMPLING LOCATIONS

White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

SAMPLE ID NUMBER	SAMPLE TYPE	INTERVAL MONITORED	SAMPLE LOCATION AND POSITION		DETECTION MONITORING FUNCTION
			Distance and Direction From Waste Cell Boundary	Hydrogeologic Position	
II-1	Ground Water	Uppermost Aquifer	100 Feet Northwest	Downgradient	Provide Water Level and Quality Data
II-2	Ground Water	Uppermost Aquifer	75 Feet North	Downgradient	Provide Water Level and Quality Data
II-3	Ground Water	Uppermost Aquifer	100 Feet North	Downgradient	Provide Water Level and Quality Data
II-4	Ground Water	Uppermost Aquifer	50 Feet East-Northeast	Downgradient	Provide Water Level and Quality Data
II-5	Ground Water	Uppermost Aquifer	35 Feet East	Downgradient	Provide Water Level and Quality Data
II-6	Ground Water	Uppermost Aquifer	100 Feet West-Northwest	Downgradient	Provide Water Level and Quality Data
II-7	Ground Water	Uppermost Aquifer	75 Feet North	Downgradient	Provide Water Level and Quality Data
II-8	Ground Water	Uppermost Aquifer	100 Feet West	Downgradient	Provide Water Level and Quality Data

II-12	Ground Water	Uppermost Aquifer	100 Feet South-Southwest	Downgradient	Provide Water Level and Quality Data
MW-13	Ground Water	Uppermost Aquifer	4,350 Feet Southwest	Upgradient	Provide Background Water Quality Data
MW-14	Ground Water	Uppermost Aquifer	1,200 Feet South	Upgradient	Provide Background Water Quality Data
SW-2	Surface Water	Creek/Stream	3540 Feet West-Southwest	Not Applicable	Provide Downstream Surface Water Quality
SW-3	Surface Water	North Buffalo Creek	4000 Feet West-Southwest	Not Applicable	Provide Downstream WWTP Water Quality
SW-4	Surface Water	North Buffalo Creek	1350 Feet Northeast	Not Applicable	Provide Downstream Surface Water Quality
SW-5	Surface Water	North Buffalo Creek	250 Feet North	Not Applicable	Provide Downstream Surface Water Quality

All distances from waste cell boundary are approximates based on measurements taken from the scaled site map Drawing D-2.

TABLE 2

SUMMARY OF SAMPLE PARAMETER MINIMUM QA/QC REQUIREMENTS

White Street Landfill
Greensboro, North Carolina

Parameter	Sampling Program	Container	Preservative	Volume	Holding Time
Antimony (Sb)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Arsenic (As)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Barium (Ba)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Beryllium (Be)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Cadmium (Cd)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Chromium (Cr)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Cobalt (Co)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Cyanide	Appendix II	plastic, glass	NaOH, pH >9	500 ml	14 days
Copper (Cu)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Lead (Pb)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Mercury (Hg)	Appendix II	plastic, glass	HNO_3, pH <2	100 ml	6 months
Nickel (Ni)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Selenium (Se)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Silver (Ag)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Sulfide	Appendix II	plastic, glass	H_2SO_4, pH <2	500 ml	7 days
Thallium (Tl)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Tin (Sn)	Appendix II	plastic, glass	HNO_3, pH <2	100 ml	6 months
Vanadium (Va)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Zinc (Zn)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
8240/8260 (VOC)	Appendix I/II	VOA	4° C	160 ml	14 days
8270 (Semi-VOC)	Appendix II	GA	4° C	1 liter	7/40 days
Chlor. Herbicides	Appendix II	GA	4° C	1 liter	7/40 days
Pesticides/PCBs	Appendix II	GA	4° C	1 liter	7/40 days
pH (std. units)	Appendix I/II	plastic, glass	4° C	100 ml	immediately
Specific Cond.	Appendix I/II	plastic, glass	4° C	100 ml	28 days

VOA - Volatile organic analysis vial (40 ml).
Plastic - Polyethylene bottle with a polypropylene cap.
GA - Glass amber bottle with Teflon® lined cap.
xx/xx days - days from extraction date/days for analysis after extraction.
HNO_3 - Nitric acid.
H_2SO_4 - Sulfuric acid.
NaOH - Sodium hydroxide.
8240/8260 - SW-846 GC/MS Method.

TABLE 3A

SUMMARY OF WATER QUALITY ANALYTICAL SAMPLE PARAMETERS

White Street Landfill (Phase I)
White Street
Greensboro, North Carolina

Metals:

PARAMETER	CERTIFICATION	METHOD	SWSL
Arsenic	low level	6010B	10
Barium	low level	6010B	100
Cadmium	low level	6010B	1
Chromium	low level	6010B	10
Lead	low level	6010B	10
Mercury	low level	7470A	0.2
Selenium	low level	6010B	10
Silver	low level	6010B	10

SWSL – Solid Waste Section Limit in parts per billion (ppb).

Volatile Organic:

ORGANIC CONSTITUENT	METHOD	SWSL
Acetone	8240/8260	100
Acrylonitrile	8240/8260	55
Benzene	8240/8260	1
Bromochloromethane	8240/8260	3
Bromodichloromethane	8240/8260	1
Bromoform	8240/8260	3
Carbon Disulfide	8240/8260	100
Carbon Tetrachloride	8240/8260	1
Chlorobenzene	8240/8260	3
Chloroethane	8240/8260	10
Chlorodibromomethane	8240/8260	3

TABLE 3a (continuation)
SUMMARY OF WATER QUALITY ANALYTICAL SAMPLE PARAMETERS

White Street Landfill (Phase I)
White Street
Greensboro, North Carolina

Volatile Organic:

ORGANIC CONSTITUENT	METHOD	SWSL
Chloroform	8240/8260	5
1,2-Dibromo-3-Chloropropane	8240/8260	13
Ethylene Dibromide	8240/8260	1
O-Dichlorobenzene	8240/8260	5
P-Dichlorobenzene	8240/8260	1
T-1,4-Dichloro-2-Butene	8240/8260	100
1,1-Dichloroethane	8240/8260	1
1,2-Dichloroethane	8240/8260	1
1,1-Dichloroethene	8240/8260	1
Cis-1,2-Dichloroethene	8240/8260	5
T-1,2-Dichloroethene	8240/8260	5
1,2-Dichloropropane	8240/8260	1
Cis-1,3-Dichloropropene	8240/8260	1
T-1,3-Dichloropropene	8240/8260	1
Ethylbenzene	8240/8260	1
Methyl Butyl Ketone	8240/8260	50
Methyl Bromide	8240/8260	10
Methyl Chloride	8240/8260	1
Methylene Bromide	8240/8260	10
Methylene Chloride	8240/8260	1
MEK; 2-Butanone	8240/8260	100
Methyl Iodide	8240/8260	10
Methyl Isobutyl Ketone	8240/8260	100

SWSL – Solid Waste Section in parts per billion (ppb).

TABLE 3a (continuation)
SUMMARY OF WATER QUALITY ANALYTICAL SAMPLE PARAMETERS

White Street Landfill (Phase I)
White Street
Greensboro, North Carolina

Volatile Organic:		
ORGANIC CONSTITUENT	**METHOD**	**SWSL**
Styrene	8240/8260	1
1,1,1,2-Tetrachloroethane	8240/8260	5
1,1,2,2-Tetrachloroethane	8240/8260	3
Tetrachloroethylene	8240/8260	1
Toluene	8240/8260	1
1,1,1-Trichloroethane	8240/8260	1
1,1,2-Trichloroethane	8240/8260	1
Trichloroethylene	8240/8260	1
Trichlorofluoromethane	8240/8260	1
1,2,3-Trichloropropane	8240/8260	1
Vinyl Acetate	8240/8260	50
Vinyl Chloride	8240/8260	1
Xylenes	8240/8260	5
SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).		

Water Quality Field Measurements:		
PARAMETER	**METHOD**	**SWSL**
Temperature	Field Thermometer or equivalent	NE
Specific Conductance	Field-Calibrated Meter	NE
pH	Field-Calibrated Meter	NE

TABLE 3B

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS
White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Metals:

PARAMETER	CERTIFICATION	METHOD	SWSL
Antimony	Low Level	6020B	6
Arsenic	Low Level	6010B	10
Barium	Low Level	6010B	100
Beryllium	Low Level	6010B	1
Cadmium	Low Level	6010B	1
Chromium	Low Level	6010B	10
Cobalt	Low Level	6010B	10
Copper	Low Level	6010B	10
Lead	Low Level	6010B	10
Mercury	Low Level	7470A	0.2
Nickel	Low Level	6010B	50
Selenium	Low Level	6010B	10
Silver	Low Level	6010B	10
Thallium	Low Level	6020B	5.5
Tin	Low Level	6010B	100
Vanadium	Low Level	6010B	25
Zinc	Low Level	6010B	10

SWSL – Solid Waste Section Limit in parts per billion (ppb).

TABLE 3b (continuation)

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS
White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Volatile Organics:

ORGANIC CONSTITUENT	METHOD	SWSL
Acetone	8240/8260	100
Acrylonitrile	8240/8260	55
Benzene	8240/8260	1
Bromochloromethane	8240/8260	3
Bromodichloromethane	8240/8260	1
Bromoform	8240/8260	3
Carbon Disulfide	8240/8260	100
Carbon Tetrachloride	8240/8260	1
Chlorobenzene	8240/8260	3
Chloroethane	8240/8260	10
Chloroform	8240/8260	5
Chlorodibromomethane	8240/8260	3
1,2-Dibromo-3-Chloropropane	8240/8260	13
Ethylene Dibromide	8240/8260	1
O-Dichlorobenzene	8240/8260	5
P-Dichlorobenzene	8240/8260	1
T-1,4-Dichloro-2-Butene	8240/8260	100
1,1-Dichloroethane	8240/8260	5
1,2-Dichloroethane	8240/8260	1
1,1-Dichloroethene	8240/8260	5
Cis-1,2-Dichloroethene	8240/8260	5

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

TABLE 3b (continuation)

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS
White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Volatile Organics:

ORGANIC CONSTITUENT	METHOD	SWSL
T-1,2-Dichloroethene	8240/8260	5
1,2-Dichloropropane	8240/8260	1
Cis-1,3-Dichloropropene	8240/8260	1
T-1,3-Dichloropropene	8240/8260	1
Ethylbenzene	8240/8260	1
Methyl Butyl Ketone	8240/8260	50
Methyl Bromide	8240/8260	10
Methyl Chloride	8240/8260	1
Methylene Bromide	8240/8260	10
Methylene Chloride	8240/8260	1
MEK; 2-Butanone	8240/8260	100
Methyl Iodide	8240/8260	10
Methyl Isobutyl Ketone	8240/8260	100
Styrene	8240/8260	10
1,1,1,2-Tetrachloroethane	8240/8260	5
1,1,2,2-Tetrachloroethane	8240/8260	3
Tetrachloroethylene	8240/8260	1
Toluene	8240/8260	1
1,1,1-Trichloroethane	8240/8260	1
1,1,2-Trichloroethane	8240/8260	1
Trichloroethylene	8240/8260	1

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

TABLE 3b (continuation)

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS

White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Volatile Organics:

ORGANIC CONSTITUENT	METHOD	SWSL
Trichlorofluoromethane	8240/8260	1
1,2,3-Trichloropropane	8240/8260	1
Vinyl Acetate	8240/8260	50
Vinyl Chloride	8240/8260	1
Xylenes	8240/8260	5

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

Water Quality Field Measurements:

PARAMETER	METHOD	SWSL
Temperature	Field Thermometer or equivalent	0.1 °c
Specific Conductance	Field-Calibrated Meter	1.0 umhos/cm^3
pH	Field-Calibrated Meter	0.01 su

TABLE 4

SUMMARY OF DETECTION MONITORING WELL HYDROGEOLOGIC PARAMETERS

White Street Landfill
Greensboro, North Carolina

Well #	Hydraulic Conductivity cm/sec	Hydraulic Conductivity ft/day	Estimated Porosity, % Total[3]	Estimated Porosity, % Effective[4]
II-1[1]	4.21×10^{-5}	0.119	35-50	15
II-2[1]	1.16×10^{-4}	0.329	35-50	15
II-3[1]	1.34×10^{-4}	0.380	35-50	15
II-4[1]	7.06×10^{-5}	0.200	35-50	15
II-5[1]	1.49×10^{-5}	0.042	35-50	15
II-6[2]	7.8×10^{-5}	0.221	35-50	15
II-7[2]	3.8×10^{-4}	1.077	35-50	15
II-8[2]	8.3×10^{-4}	2.353	35-50	15
MW-13[1]	5.00×10^{-5}	0.142	35-50	15
MW-14[2]	2.61×10^{-4}	0.740	35-50	15

[1] Hydraulic conductivity values provided by BPA Environmental & Engineering, Inc. Data analyzed using method of Hvorslev, M.J., Time Lag and Soil Permeability in Groundwater Observations, US Army Corps of Engineers Waterways Experimental Station, Bulletin 36, 1951.

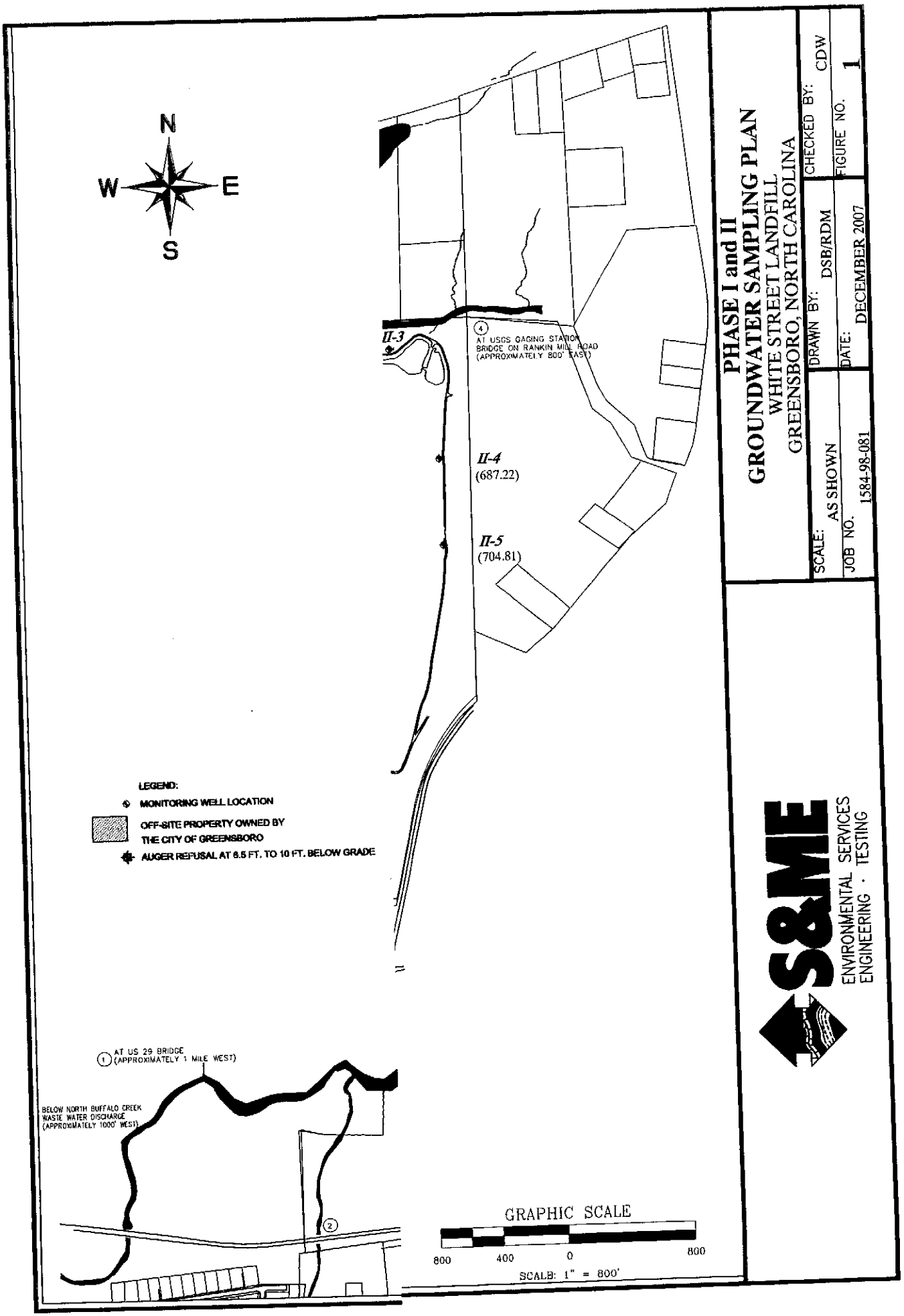
[2] Hydraulic conductivity values provided by HDR Engineering, Inc. Data analyzed using method of Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells, Water Resources Research, v. 12, pp. 423-428.

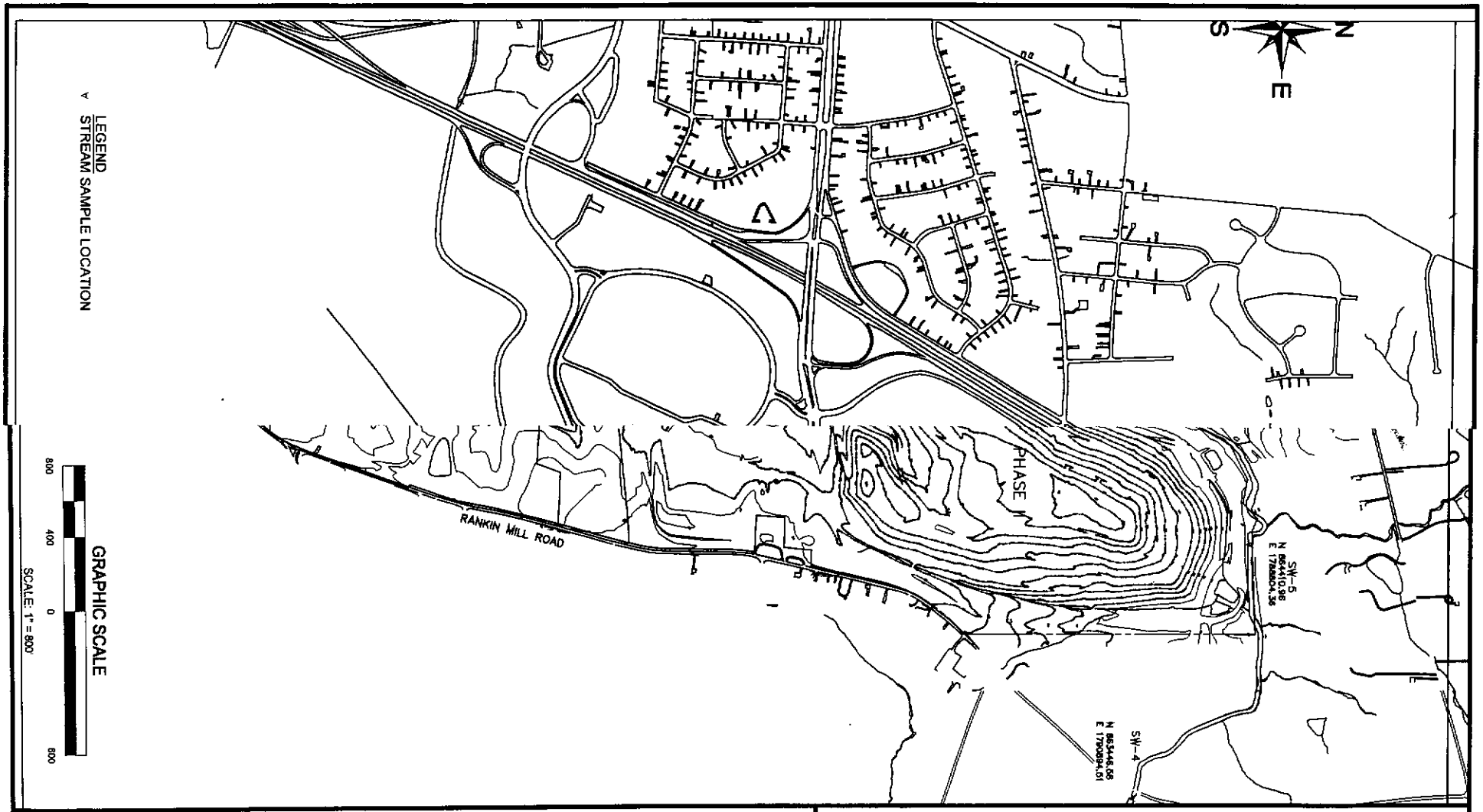
[3] Total porosity values estimated from undisturbed samples taken elsewhere at the White Street Landfill. These are a typical range of values for the sandy silts to silty sands found at the site.

[4] Estimated effective porosity values are from Table 3-1 in the "Interim Final Guidance Document on the Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," USEPA, April 1989. Based on boring logs, although some silty sands were present, sandy silt soil was chosen as the typical and more conservative texture for the aquifer at each detection monitoring well.

APPENDIX II

Sample Location Maps


N
W
E
S
II-3
AT USGS GAGING STATION
BRIDGE ON RANKIN MILL ROAD
(APPROXIMATELY 800' EAST)
II-4
(687.22)
II-5
(704.81)
LEGEND:
MONITORING WELL LOCATION
OFF-SITE PROPERTY OWNED BY
THE CITY OF GREENSBORO
AUGER REFUSAL AT 8.5 FT. TO 10 FT. BELOW GRADE
AT US 29 BRIDGE
(APPROXIMATELY 1 MILE WEST)
BELOW NORTH BUFFALO CREEK
WASTE WATER DISCHARGE
(APPROXIMATELY 1000' WEST)
GRAPHIC SCALE
800 400 0 800
SCALE: 1" = 800'
PHASE I and II
GROUNDWATER SAMPLING PLAN
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
SCALE: AS SHOWN
JOB NO. 1584-98-081
DRAWN BY: DSB/RDM
DATE: DECEMBER 2007
CHECKED BY: CDW
FIGURE NO. 1
S&ME
ENVIRONMENTAL SERVICES
ENGINEERING · TESTING



S&ME
ENVIRONMENTAL SERVICES
ENGINEERING · TESTING

PHASE I and II
SURFACE WATER SAMPLING LOCATIONS
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE:	DRAWN BY:	CHECKED BY:
AS SHOWN	DSB/RDM	LE
JOB NO.	DATE:	FIGURE NO.
1584-98-081	DECEMBER 2007	2

APPENDIX III

Soil Boring Logs and Well Construction Records

Sheet ___ of ___

OWNER: City of Greensboro	BORING NUMBER: B-1 (D-1)
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				6" Topsoil
	1	ss	2.5 4.0	SILTY SAND, tan, white, stiff, (SM-ML). NOTE: Residual Soil/Saprolite.
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	SILTY SAND, tan, white, v/stiff, (SM-ML). NOTE: Saprolite/weathered rock, coarse to fine grained sand.
10	4	ss	10.0 11.5	
15	5	ss	15.0 16.5	V/hard. NOTE: Weathered rock consisting predominately of sand to gravel-size frags. consisting of quartz feldspar and mica, obvious parent rock of above soils.
20	6	ss	20.0 21.5	
25				Auger Refusal at 24.0'
30				

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % (X) — WATER CONTENTS % (⊕) — LIQUID LIMIT % (Δ) (10, 20, 30, 40, 50)

● STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

40 — 35 — 50

Well Screen Set At 14-24 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 8.0 (BAR) @ 0 HRS. ___ @ ___ HRS.	BORING STARTED 5-9-89		BORING COMPLETED 5-9-89
	RIG B-50	FOREMAN R. Barron	APP'D BY ABN	AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

OMPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. EPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, . BOX 2091, RALEIGH, N.C. 27602

AE OF SITE:	PERMIT NO.:
Greensboro Landfill	Well No. 1
DDRESS:	OWNER (print):
Off White Street in Greensboro, NC	City Of Greensboro
RILLING CONTRACTOR:	REGISTRATION NO.:
Engineering Tectonics, P.A.	835

ing Type:	Sch 40 PVC dia. 2 in.	Grout Depth:	from 0	to 11	ft. - dia. 6 in.
ing Depth:	from 0 to 14 ft. - dia. 2 in.	Bentonite Seal:	from 11	to 12	ft. - dia. 6 in.
en Type:	PVC .010 Slot dia. 2 in.	Sand/Gravel PK:	from 12	to 24	ft. - dia. 6 in.
een Depth:	from 14 to 24 ft. - dia. 2 in.	Total Well Depth:	from 0	to 24	ft. - dia. 6 in.

c Water Level: _____ feet from top of casing Date Measured ___ / ___ / ___

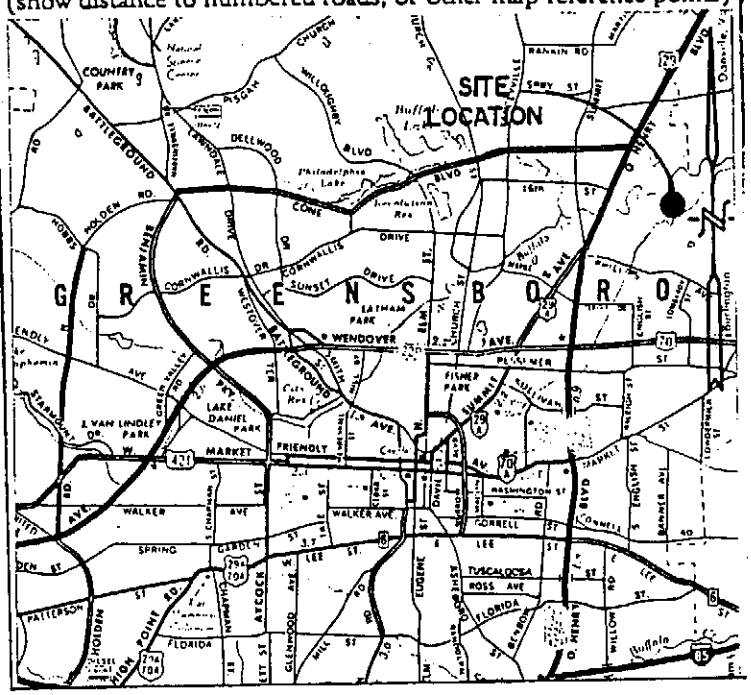
d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



REMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

OWNER: City of Greensboro	BORING NUMBER: B-2 (I-2)
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2}: 1, 2, 3, 4, 5

PLASTIC LIMIT % X ---- WATER CONTENTS % ⊕ ---- LIQUID LIMIT % △: 10, 20, 30, 40, 50

● STANDARD PENETRATION BLOWS/FT.: 10, 20, 30, 40, 50

SURFACE ELEVATION

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL	STANDARD PENETRATION BLOWS/FT.
				CLAYEY SILT, w/little gravel, brown, black, gray, red, soft, (ML-CL). NOTE: Residual soil with abundant organics (roots, stems, grass, etc.)	
	1	ss	2.5–4.0		9
5	2	ss	5.0–6.5		7
	3	ss	7.5–9.0	CLAY, w/little sand, gray, tan, firm, (CL-CH). NOTE: Residual Soil/Saprolite.	12
10	4	ss	10.0–11.5		11
				SANDY CALY, gray, red, tan, soft, (CL-CH). NOTE: Residual Soil/Saprolite.	
15	5	ss	15.0–16.5		8
				SANDY SILT, green, gray, v/hard, (ML). NOTE: Residual Soil/Saprolite.	
20	6	ss	20.0–21.5		
				Auger Refusal at 22'.	
25					
30					

Well Screen Set At 12-22 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-SITU, THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 16.0' (BAR) @ 0 HRS.; ______ @ ______ HRS.	BORING STARTED: 5-11-89	BORING COMPLETED: 5-11-89
	RIG: B-50 / FOREMAN: R. Barron	APP'D BY: ABN / AUGER: 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

)MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. .PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH,). BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill	PERMIT NO.: Well No. 2
DDRESS: Off White Street in Greensboro, NC	OWNER (print): City Of Greensboro
ILLING CONTRACTOR: Engineering Tectonics, P.A.	REGISTRATION NO.: 835

ing Type: SCH 40 PVC dia. 2 in.
ing Depth: from 0 to 12 ft. - dia. 2 in.
en Type: PVC .010 slot dia. 2 in.
een Depth: from 12 to 22 ft. - dia. ____ in.

Grout Depth: from 0 to 9 ft. - dia. 6 in.
Bentonite Seal: from 9 to 10 ft. - dia. 6 in.
Sand/Gravel PK: from 10 to 22 ft. - dia. 6 in.
Total Well Depth: from 0 to 22 ft. - dia. 6 in.

c Water Level: _____ feet from top of casing Date Measured ___ / ___ / ___

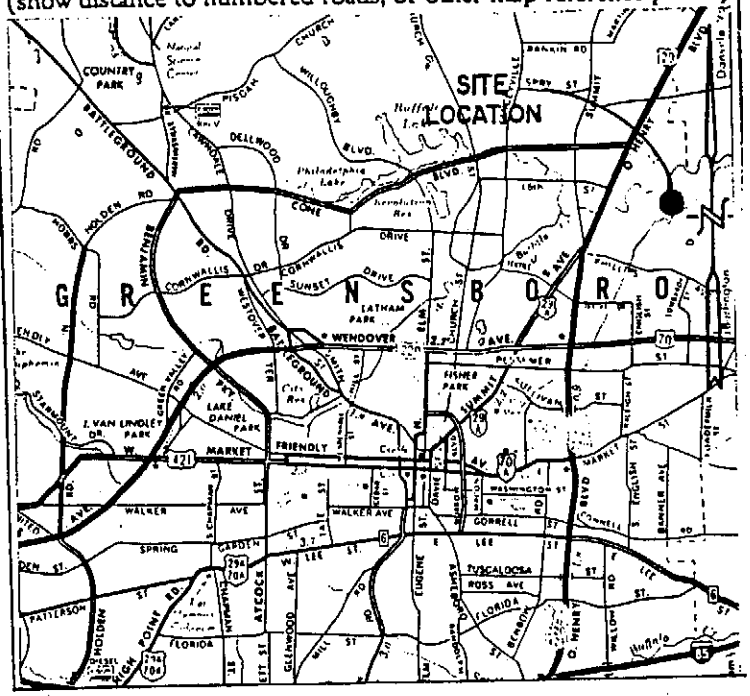
d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



EMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

GW-1 (7-85)

Sheet 1 of 2

OWNER: City of Greensboro	BORING NUMBER: B-4 (I-3)
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro. NC	JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2}: 1 2 3 4 5

PLASTIC LIMIT % X ---------- WATER CONTENTS % ⊕ ---------- LIQUID LIMIT % Δ

10 20 30 40 50

● STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
	1	ss	2.5 4.0	SANDY CLAY, brown, black, soft, (CL). NOTE: Alluvial/fill?
5	2	ss	5.0 6.5	SILTY CLAY, brown, gray, tan, soft, (CL). NOTE: Alluvial/fill?
	3	ss	7.5 9.0	SILTY SAND, gray, red, soft, (SM). NOTE: Residual Soil/Saprolite, fine-grained well sorted sand.
10	4	ss	10.0 11.5	GRAVELLY SAND, black, tan, white, (SP). NOTE: Saprolite/weathered rock consisting of quartz, feldspar, mica and mafic mineral, abundant sand to gravel size rock frags.
15	5	ss	15.0 16.5	CLAYEY GRAVELLY SILT, brown, gray, tan, v/hard, (SC). NOTE: Saprolite/weathered rock with abundant sand to gravel size rock frags.
				Boring Terminated at 16.0'.
20				
25				
30				

7 4 4

Well Screen Set At 6-16 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 6.0' (BAR) @ 0 HRS. @ ____ HRS.	BORING STARTED		BORING COMPLETED
	RIG B-50	FOREMAN R. Barron	APP'D BY ABN
			AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH,). BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill	PERMIT NO.: Well No. 4
DRESS: Off White Street in Greensboro, NC	OWNER (print): City Of Greensboro
ILLING CONTRACTOR: Engineering Tectonics, P.A.	REGISTRATION NO.: 835

ing Type: SCH 40 PVC dia. 2 in.
ing Depth: from 0 to 6 ft. - dia. 2 in.
en Type: PVC .010 Slot dia. 2 in.
en Depth: from 6 to 16 ft. - dia. 2 in.

Grout Depth: from 0 to 3 ft. - dia. 6 in.
Bentonite Seal: from 3 to 4 ft. - dia. 6 in.
Sand/Gravel PK: from 4 to 16 ft. - dia. 6 in.
Total Well Depth: from 0 to 16 ft. - dia. 6 in.

ic Water Level: _____ feet from top of casing Date Measured ___ / ___ / ___

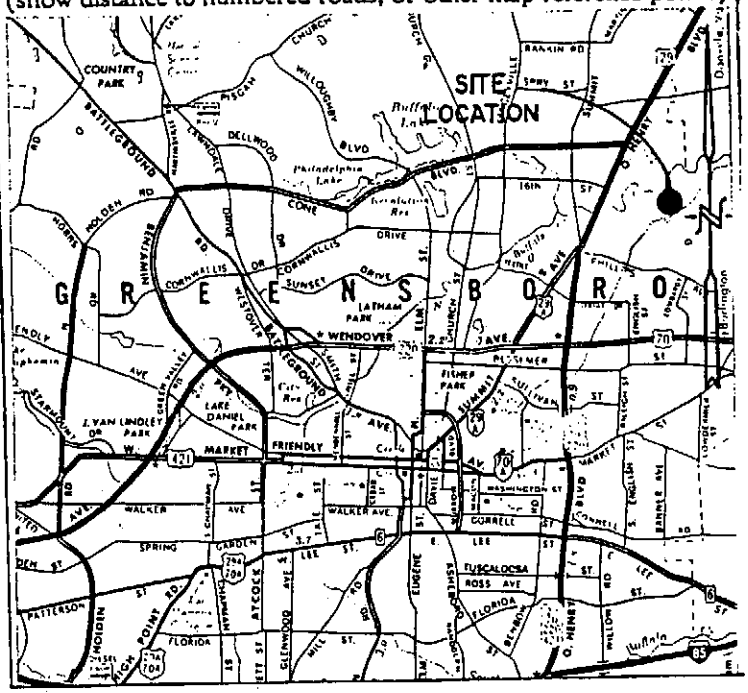
d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



EMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

Sheet ____ of ____

OWNER: City of Greensboro	BORING NUMBER: B-5A
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro. NC	JOB. NO.: 88-387-E

B-4

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % (X) — WATER CONTENTS % (⊕) — LIQUID LIMIT % (Δ) (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
	1	ss	2.5 4.0	SANDY SILT, w/little gravel, gray, tan, stiff to v/stiff, (ML-SM). NOTE Residual Soil/Saprolite, samples wet below 7.0'.
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	
10	4	ss	10.0 11.5	
				GRAVELLY SAND, black, gray, tan, white, v/stiff, (SP). NOTE: Saprolite/ Weathered rock.
15	5	ss	15.0 16.5	
				CLAYEY SAND, brown, tan, white, v/stiff, (CL-SC). NOTE: Saprolite/ Weathered rock.
20	6	ss	20.0 21.5	
				Auger Refusal at 24.0'.
25				
30				

42

45

50

Well Screen Set At 14-24 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 22' (BAR) @ 0 HRS. ____ @ ____ HRS.	BORING STARTED 6-14-89		BORING COMPLETED 6-14-89
	RIG B-50	FOREMAN R. Barron	APP'D BY ABN
			AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

)MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C.
:PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH,
). BOX 2091, RALEIGH, N.C. 27602

E-4

ME OF SITE: Greensboro Landfill

PERMIT NO.: Well No. 5

)DRESS: Off White Street in Greensboro, NC

OWNER (print): City Of Greensboro

.ILLING CONTRACTOR: Engineering Tectonics, P.A.

REGISTRATION NO.: 835

ing Type: Sch 40 PVC dia. 2 in.
ing Depth: from 0 to 14 ft. - dia. 2 in.
en Type: PVC .010 Slot dia. 2 in.
een Depth: from 14 to 24 ft. - dia. 2 in.

Grout Depth: from 0 to 11 ft. - dia. 6 in.
Bentonite Seal: from 11 to 12 ft. - dia. 6 in.
Sand/Gravel PK: from 12 to 24 ft. - dia. 6 in.
Total Well Depth: from 0 to 24 ft. - dia. 6 in.

ic Water Level: _____ feet from top of casing

Date Measured ___ / ___ / ___

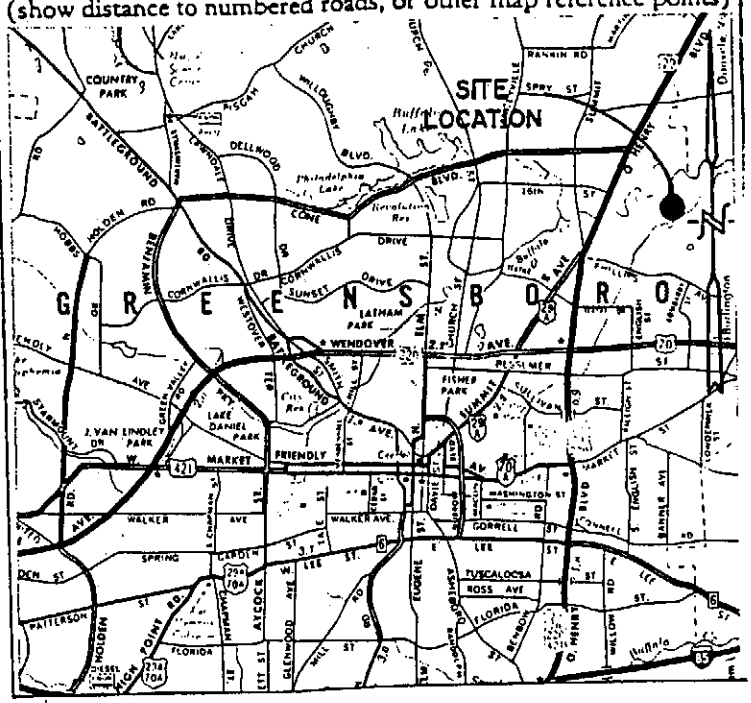
.d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



EMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

Sheet 1 of 1

OWNER: Citv of Greensboro

BORING NUMBER: B-7

PROJECT NAME: Greensboro Landfill

ARCHITECT-ENGINEER:

SITE LOCATION: Greensboro. NC

JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % X ---------- WATER CONTENTS % ⊕ ---------- LIQUID LIMIT % Δ (10, 20, 30, 40, 50)

● STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
	1	ss	2.5 4.0	SILT, w/little clay, reddish-brown, firm, (ML). NOTE: Trace organics (fine roots) with an occasional gravel size rock frag., fill.
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	
10	4	ss	10.0 11.5	
15	5	ss	15.0 16.5	SILTY CLAY, w/trace sand, gray, tan, soft to firm, (CL-ML). NOTE: Residual Soil/Alluvial?
20	6	ss	20.0 21.5	
25	7	ss	25.0 26.5	SANDY SILT, w/little gravel, gray, v/stiff to v/hard, (ML-SM). NOTE: Saprolite/weathered rock with granitic and quartz gravel size rock fragments.
30	8	ss	30.0 31.5	Boring Terminated at 30'.

Standard penetration values: 17, 14, 9, 15, 7, 10, 56

Well Screen Set At 20-30 ft

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE

-- @ 0 HRS.

18.34' @ Below TOC HRS. 7-12-89

BORING STARTED: 6-13-89

BORING COMPLETED: 6-13-89

RIG: B-50

FOREMAN: R. Barron

APP'D BY: ABN

AUGER: 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

OMPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, A[illegible] FORM TO THE N.C. EPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE [illegible]NT BRANCH, . BOX 2091, RALEIGH, N.C. 27602

ME OF SITE:	PERMIT NO.:
Greensboro Landfill	Well No. 7
DDRESS:	OWNER (print):
Off White Street in Greensboro, NC	City Of Greensboro
RILLING CONTRACTOR:	REGISTRATION NO.:
Engineering Tectonics, P.A.	835

sing Type:	Sch 40 PVC	dia.	2 in.	Grout Depth:	from	0	to	17	ft. - dia. 6 in.
sing Depth:	from 0	to	20 ft. - dia. 2 in.	Bentonite Seal:	from	17	to	18	ft. - dia. 6 in.
en Type:	PVC .010 Slot	dia.	2 in.	Sand/Gravel PK:	from	18	to	30	ft. - dia. 6 in.
een Depth:	from 20	to	30 ft. - dia. 2 in.	Total Well Depth:	from	0	to	30	ft. - dia. 6 in.

tic Water Level: 18.34 feet from top of casing — Date Measured 7 / 12 / 89

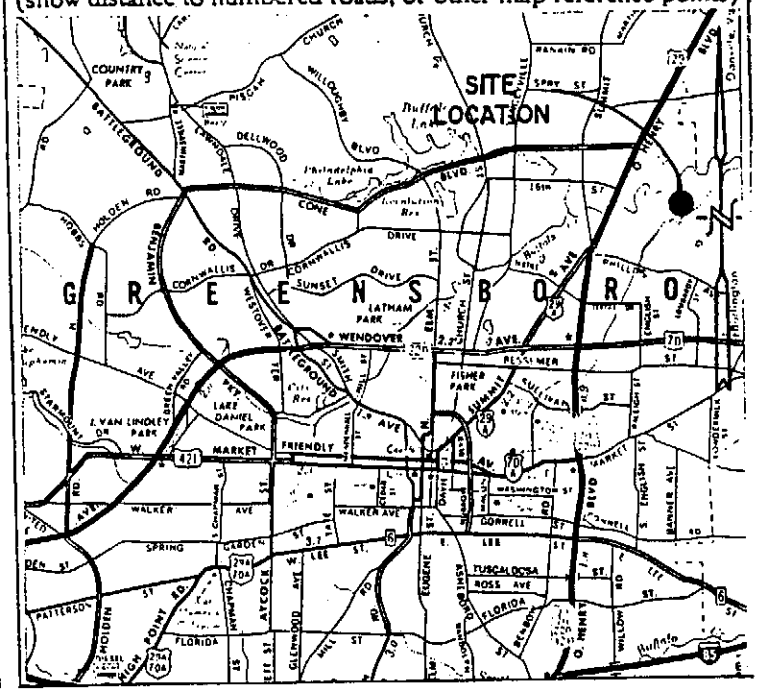
uld (gpm): low — Method of Testing: Bail — Casing is 3.83 feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



REMARKS:

DATE: 7-14-89 SIGNATURE:

OWNER: City of Greensboro

BORING NUMBER: B-8

II-3

PROJECT NAME: Greensboro Landfill

ARCHITECT-ENGINEER:

SITE LOCATION: Greensboro, NC

JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENTS % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL	STANDARD PENETRATION BLOWS/FT.
				SURFACE ELEVATION	
				1.0 ft Topsoil.	
	1	ss	2.5 4.0	CLAYEY SILT, w/little sand, brown, black, gray, tan, white, mottled, soft to firm, (ML). NOTE: Residual Soil/ fill? Occasional gravel size quartz frags.	10
5	2	ss	5.0 6.5	CLAYEY SILT, w/trace sand, brown, gray, tan, mottled, hard, (ML-CL). NOTE: Residual Soil/Fill? Large >1.0" mafic rock frag., abundant wood (large root frags.)Trace	50/5
	3	ss	7.5 9.0	CLAY, w/little sand, gray, yellow, tan, firm, (CH). NOTE: Fill/Alluvial, abundant organics, (wood/roots)	15
10	4	ss	10.0 11.5	CLAYEY SILT, w/little sand, reddish brown, firm, (ML). NOTE: Fill/Alluvial, trace organics (roots).	12
15	5	ss	15.0 16.5	SANDY GRAVELLY SILT, w/little clay, brown, black, gray, tan, white, mottled, firm, (ML). NOTE: Residual Soil/ Saprolite with abundant angular quartz rock fragments.	18
20	6	ss	20.0 21.5	SILT, w/little clay, sand, brown, gray, tan, stiff to v/hard, (ML). NOTE: Residual Soil/Saprolite, trace Sand.	43
25	7	ss	25.0 26.5		31
30	8	ss	30.0 31.5	Boring Terminated at 30'.	

Well Screen Set At 20-30 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE
30 (BAR) @ 0 HRS.
16.63' @ Below TOC HRS.
7-12-89

BORING STARTED: 6-12-89

BORING COMPLETED: 6-12-89

RIG: B-50 FOREMAN: R. Barron APP'D BY: ABN AUGER: 6" HSA

ENGINEERING TECTONICS, P. A.

N.C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

)MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, . BOX 2091, RALEIGH, N.C. 27602

F-3

ME OF SITE: Greensboro Landfill	PERMIT NO.: Well No. 8
DRESS: Off White Street in Greensboro, NC	OWNER (print): City Of Greensboro
ILLING CONTRACTOR: Engineering Tectonics, P.A.	REGISTRATION NO.: 835

ng Type: Sch 40 PVC dia. 2 in.
ng Depth: from 0 to 20 ft. - dia. 2 in.
en Type: PVC .010 Slot dia. 2 in.
een Depth: from 20 to 30 ft. - dia. 2 in.

Grout Depth: from 0 to 17 ft. - dia. 6 in.
Bentonite Seal: from 17 to 18 ft. - dia. 6 in.
Sand/Gravel PK: from 18 to 30 ft. - dia. 6 in.
Total Well Depth: from 0 to 30 ft. - dia. 6 in.

ic Water Level: 16.63 feet from top of casing — Date Measured 7 / 12 / 89

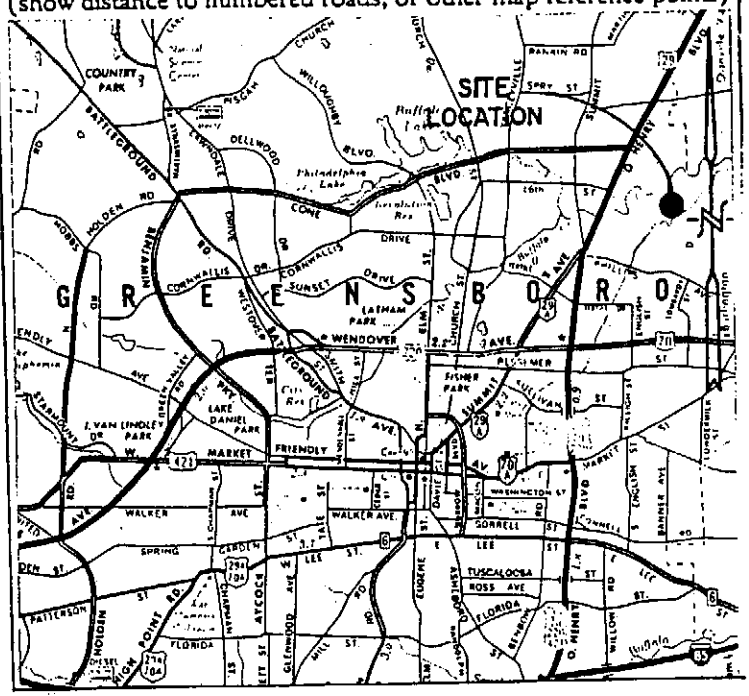
d (gpm): low Method of Testing: Bail — Casing is 3.13 feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



SIGNATURE:

OWNER: City of Greensboro

BORING NUMBER: B-9

PROJECT NAME: Greensboro Landfill

ARCHITECT-ENGINEER:

SITE LOCATION: Greensboro, NC

JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % (X) — WATER CONTENTS % (⊕) — LIQUID LIMIT % (Δ) (10, 20, 30, 40, 50)

● STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				1.0' Topsoil.
	1	ss	2.5 4.0	CLAYEY SILT, w/little sand, gray, tan, white, soft to firm, (ML). NOTE: Residual Soil/Saprolite.
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	
10	4	ss	10.0 11.5	SILT, w/little clay, brown, gray, tan, firm, (ML). NOTE: Residual Soil/Saprolite.
15	5	ss	15.0 16.5	
20	6	ss	20.0 21.5	CLAYEY GRAVELLY SILT, gray, tan, hard to v/hard, (ML). NOTE: Residual Soil/Saprolite, abundant rock frags. (40%), no sample recovered below 21.5'.
25	7	ss	25.0 26.5	
				Auger Refusal at 26.0'.
30	8	ss	30.0 31.5	

STANDARD PENETRATION BLOWS/FT. plotted: 18, 15, 7, 12, 22

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: Dry (BAR) @ 0 HRS. / 13.16' @ Below TOC HRS. / 7-12-89

BORING STARTED 6-12-89

BORING COMPLETED 6-12-89

RIG B-50

FOREMAN R. Barron

APP'D BY ABN

AUGER 6"

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

)MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, O. BOX 2091, RALEIGH, N.C. 27602

ME OF SITE:	PERMIT NO.:
Greensboro Landfill	Well No. 9
DRESS:	OWNER (print):
Off White Street in Greensboro, NC	City Of Greensboro
LLING CONTRACTOR:	REGISTRATION NO.:
Engineering Tectonics, P.A.	835

ng Type: SCH 40 PVC dia. 2 in. Grout Depth: from 0 to 13 ft. - dia. 6 in.
ng Depth: from 0 to 16 ft. - dia. 2 in. Bentonite Seal: from 13 to 14 ft. - dia. 6 in.
en Type: PVC .010 Slot dia. 2 in. Sand/Gravel PK: from 14 to 26 ft. - dia. 6 in.
een Depth: from 16 to 26 ft. - dia. 2 in. Total Well Depth: from 0 to 26 ft. - dia. 6 in.

c Water Level: 13.16 feet from top of casing Date Measured 7 / 12 / 89

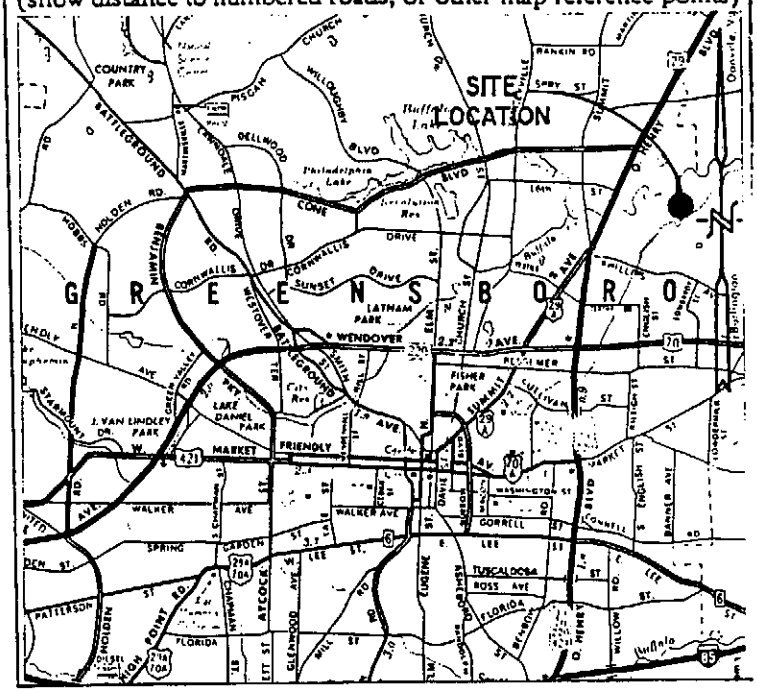
ld (gpm): Low Method of Testing: Bail Casing is 3.42 feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



REMARKS:

DATE: 7-14-89 SIGNATURE:

GW-7 (6-85)

MW-II-6

NORTH CAROLINA DEPARTMENT OF NATURAL RESOUCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT-GROUNDWATER SECTION
P.O. BOX 27687-RALEIGH, NC 27611 PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR: BADGER DRILLING

DRILLER REGISTRATION NUMBER: 1486

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: GREENSBORO NC
(Road, Community, or Subdivion and Lot No.)

County: _____

2. OWNER: _____
ADDRESS: _____
Street or Route No. City or Town State Zip Code

3. DATE DRILLED: 9-12-94 USE OF WELL: MONITORING

4. TOTAL DEPTH: 17.0 CUTTINGS COLLECTED: ✓ Yes _ No

5. DOES WELL REPLACE EXITING WELL? _ Yes ✓ No

6. STATIC WATER LEVEL: _____ FT. Above _ Below TOP OF CASING,
TOP OF CASING IS: 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST: AIR

8. WATER ZONES (depth): N/A

9. CHLORINATION: Type N/A Amount _____

10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 2.5 AG	To 4.5	Ft.	2"	Sch 40	PVC
From ___	To ___	Ft.			
From ___	To ___	Ft.			

11. GROUT:

	Depth		Material	Method
From 0.0	To 3.0	Ft.	Portland Bentonite	
From ___	To ___	Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From 4.5	To 17.0	Ft.	2" in.	.010 in.	PVC
From ___	To ___	Ft.	___ in.	___ in.	
From ___	To ___	Ft.	___ in.	___ in.	

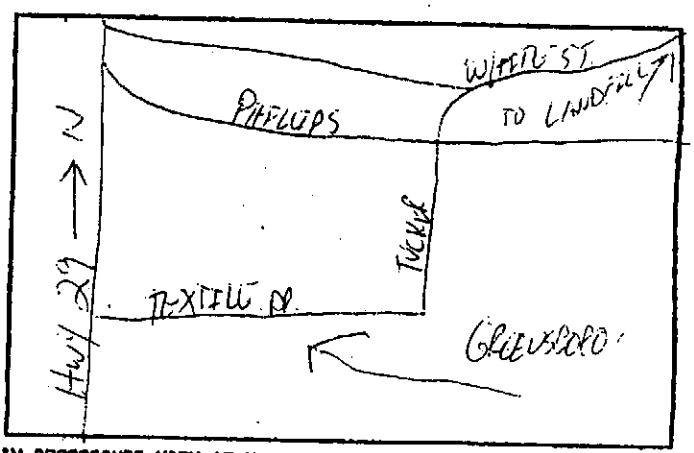
13. GRAVEL PACK:

	Depth		Size	Material
From 3.0	To 17.0	Ft.	#2	
From ___	To ___	Ft.		

14. REMARKS: REMOVED SOIL 1.0' TO 3.0'

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points).



I DO HEREBY CERIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

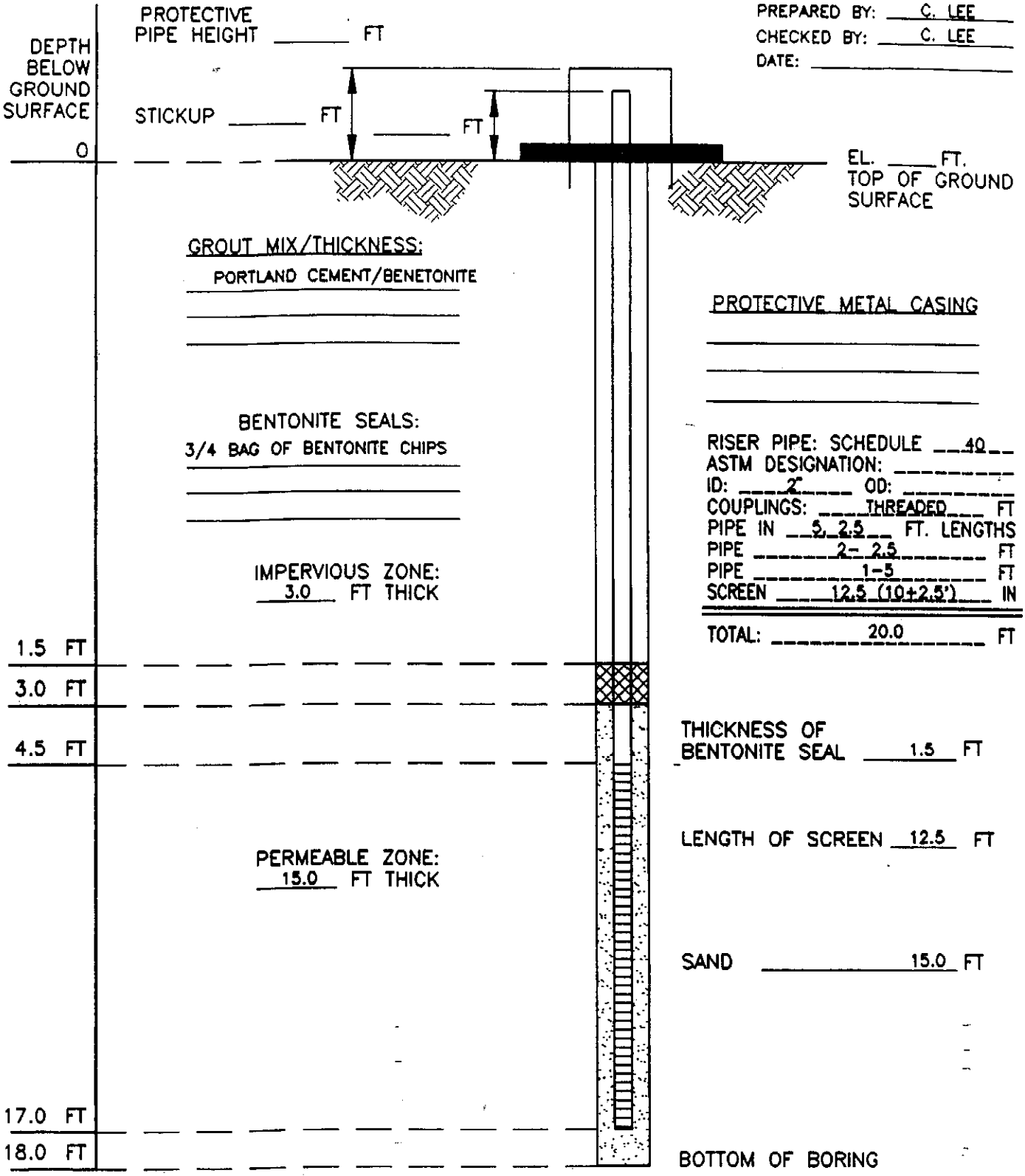
9-12-94
DATE

3-1

Submit original to Division of Environmental Management and copy to well owner.

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-11-6
BORING NO.: B-11-6
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE: _____



REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

HDR

HDR Engineering, Inc.

PROJECT: WHITE STREET LANDFILL | PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. | BORING NUMBER: II-6 OFFSET 10' SOUTH | PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'					RED ORANGE SL. SANDY CLAYEY SILT	
	8'						
	12'					GREEN-GREY SILT	AMPHIBOLITE
SS-3	16'	50/6"	SS			DK. GREEN/TAN SPECKLED, POORLY FOLIATED SL. SANDY SILT, BLACK STREAKS ON FRACTURES, HARD	WILL MOVE 10' SOUTH/TRY AGAIN
	20'					EOH @ 18.0'	
	24'						
	28'						
	32'						
	36'						
	40'						

BOREHOLE COMPLETION: 18.0' BELOW GROUND

WATER DEPTH: ~ 6.0' DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

PROJECT: WHITE STREET LANDFILL — PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. — BORING NUMBER: II-6 — PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'					RED, BROWN LAMINATED CLAYEY SILT TO 5.5. THEN LT. GREEN GREY SILT. HARD FINELY LAMINATED	
SS-1		23-23 15-18	SS				
	8'					GREY GREEN, BROWN STREAKED FOLIATED SILT TO DK GREY V. FINE SILT W/WHITE STREAKS. PWR.	
SS-2		8-17 20-26	SS				AMPHIBOLITE
	12'					ROCK @ ~13'-0" AUGER REFUSAL	WILL MOVE 10' SOUTH/TRY AGAIN
	20'						
	24'						
	28'						
	32'						
	36'						
	40'						

BOREHOLE COMPLETION: 13.0' BELOW GROUND

WATER DEPTH: @ 2:30 WL @ 10.5' BELOW GRADE DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

PROJECT: WHITE STREET LANDFILL — PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. — BORING NUMBER: II-7 — PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'						
SS-1		3-3 4-4	SS			RED BROWN SILTY CLAY, W/BLACK WHITE AMPHIBOLITE PEBBLE IN TIP	
	8'						
SS-2	12'	5-5 7-8	SS			BROWN FINELY LAMINATED CLAYEY, SL. SANDY SILT TO GREEN-ORANGE SPOTTED CRUDELY FOL WEATHERED SILT	SCHIST./ AMPHIBOLITE
SS-3	16'	7-8 19-23	SS			DK GREEN/PALE TAN SPECKLED M-C S. SILT W/FEOX FRACTURES AT BASE, 1.0 GREEN/BROWN FINELY LAM. SILT AT TOP OF INTERVAL	SCHIST./ AMPHIBOLITE
	20'						
SS-4		13-13 26-22	SS			GREEN/BROWN EQRUIGRAN SL. SANDY SILT TO LAMINATED/FOLIATED PURPLISH BRN & GREEN SL. SANDY SILT TO GREEN/TAN EQUIGRAN SL. SANDY SILT	GETTING HARD ALT FOL. SCHIST AMPHIBOLITE
	24'						
						EOH @ 25.0'	
	28'						
	32'						
	36'						
	40'						

BOREHOLE COMPLETION: 25.0'

WATER DEPTH: ~ 12.0' — DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

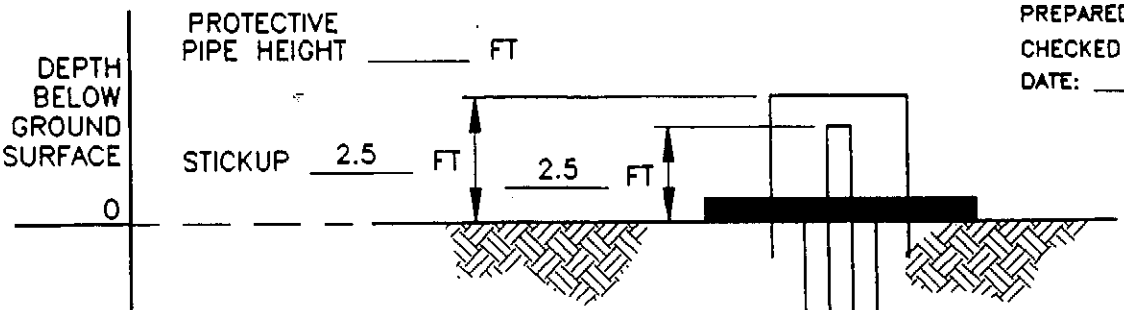
LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-11-7
BORING NO.: 11-7
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE: _____



GROUT MIX

PROTECTIVE METAL CASING

BENTONITE SEALS:
1 GAB BENTONITE CHIPS, 50 LBS

RISER PIPE: SCHEDULE 40
ASTM DESIGNATION: _____
ID: 2" OD: _____
COUPLINGS: THREADED FT
PIPE IN 10.5 FT. LENGTHS
PIPE 1-10 FT
PIPE 1-5 (CUT AT 2.5) FT
SCREEN 15 IN
TOTAL: 30 (27.5') FT

IMPERVIOUS ZONE:
7.7 FT THICK

5.0 FT
7.5 FT
10 FT

THICKNESS OF BENTONITE SEAL 2.5 FT

LENGTH OF SCREEN 15 FT

PERMEABLE ZONE:
17.5 FT THICK

SAND 17.5 FT

25 FT
25 FT

BOTTOM OF BORING

REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

HDR

HDR Engineering, Inc.

PROJECT: WHITE STREET LANDFILL — PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. — BORING NUMBER: II-8 — PAGE: 1

BORING LOG

DATE: 9/13/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'						
SS-1		10-12 12-12	SS			FILL, BROWN, RED-ORANGE MOTTLED SILTY CLAY, WELL COMPACTED.	
	8'						
SS-2		11-19 27-36	SS			FILL AS ABOVE TO 11.0, THEN REDDISH BRN, GREEN SPOTTED/STREAKED SILTY SAND, CHLORITE IN FRACTURES.	SCHIST./ AMPHIBOLITE
	12'						
SS-3	16'	39-50 5"	SS			DK. BROWN, BLACK, RED BROWN, LT. GREY SPECKLED SL. SILTY SAND, HARD DRILLING	SCHIST./ AMPHIBOLITE
	20'						
SS-4		50/6"	SS			AS ABOVE. STILL CUTABLE	GETTING HARD ALT FOL. SCHIST AMPHIBOLITE
	24'						
SS-5		30-50 4"	SS			BLACK, BROWN, LT. GREY SPECKLED EQUIGRANULAR C. GR. SAND, SOFTER DRILLING AFTER WET SOIL - 27.0'	
	28'						
SS-6		45-50 4"	SS			AS ABOVE, WEATHERED BROWN IN TIP.	
	32'					EOH @ 32.5'	
	36'						
	40'						

BOREHOLE COMPLETION: 32.5'

WATER DEPTH: ~ 12.0' — DATE: 9/13/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

NORTH CAROLINA DEPARTMENT OF NATURAL RESOUCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT-GROUNDWATER SECTION
P.O. BOX 27687-RALEIGH, NC 27611 PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR: BADGER DRILLING
DRILLER REGISTRATION NUMBER: 1486
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: GREENSBORO N.C. County: _____
(Road, Community, or Subdivion and Lot No.)

2. OWNER: _____
ADDRESS: WHITE ST RANDALL (Street or Route No. / City or Town / State / Zip Code)

3. DATE DRILLED: 9-13 USE OF WELL: MONITORING

4. TOTAL DEPTH: 32.0 CUTTINGS COLLECTED: ✓ Yes _ No

5. DOES WELL REPLACE EXITING WELL? _ Yes ✓ No

6. STATIC WATER LEVEL: _____ FT. Above Below TOP OF CASING,
TOP OF CASING IS: _____ FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST: AIR

8. WATER ZONES (depth): N/A

9. CHLORINATION: Type N/A Amount _____

10. CASING:

	Depth From	Depth To		Diameter	Wall Thickness or Weight/Ft.	Material
From	2.5 AGV	To 17.0	Ft.	2"	Sch 40	PVC
From	____	To ____	Ft.	____	____	____
From	____	To ____	Ft.	____	____	____

11. GROUT:

	Depth From	Depth To		Material	Method
From	0.0	To 13.0	Ft.	PORTLAND BENTONITE	SLURRY
From	____	To ____	Ft.	____	____

12. SCREEN:

	Depth From	Depth To		Diameter		Slot Size		Material
From	17.0	To 32.0	Ft.	2"	in.	.010	in.	PVC
From	____	To ____	Ft.	____	in.	____	in.	____
From	____	To ____	Ft.	____	in.	____	in.	____

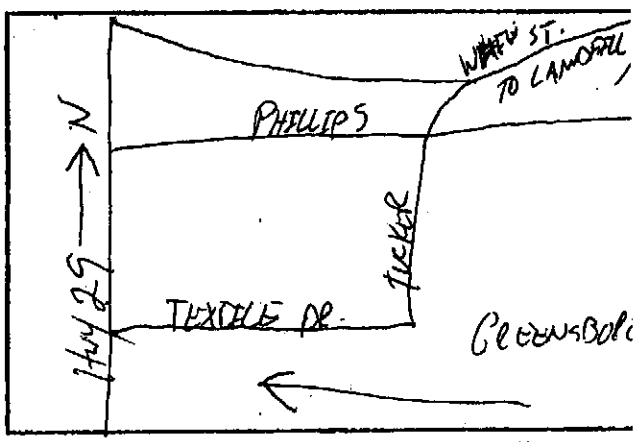
13. GRAVEL PACK:

	Depth From	Depth To		Size	Material
From	15.0	To 32.0	Ft.	#2	
From	____	To ____	Ft.	____	____

14. REMARKS: BENTONITE SEAL 13.0'-15.0'

if additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Ro
or other map reference points).



I DO HEREBY CERIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

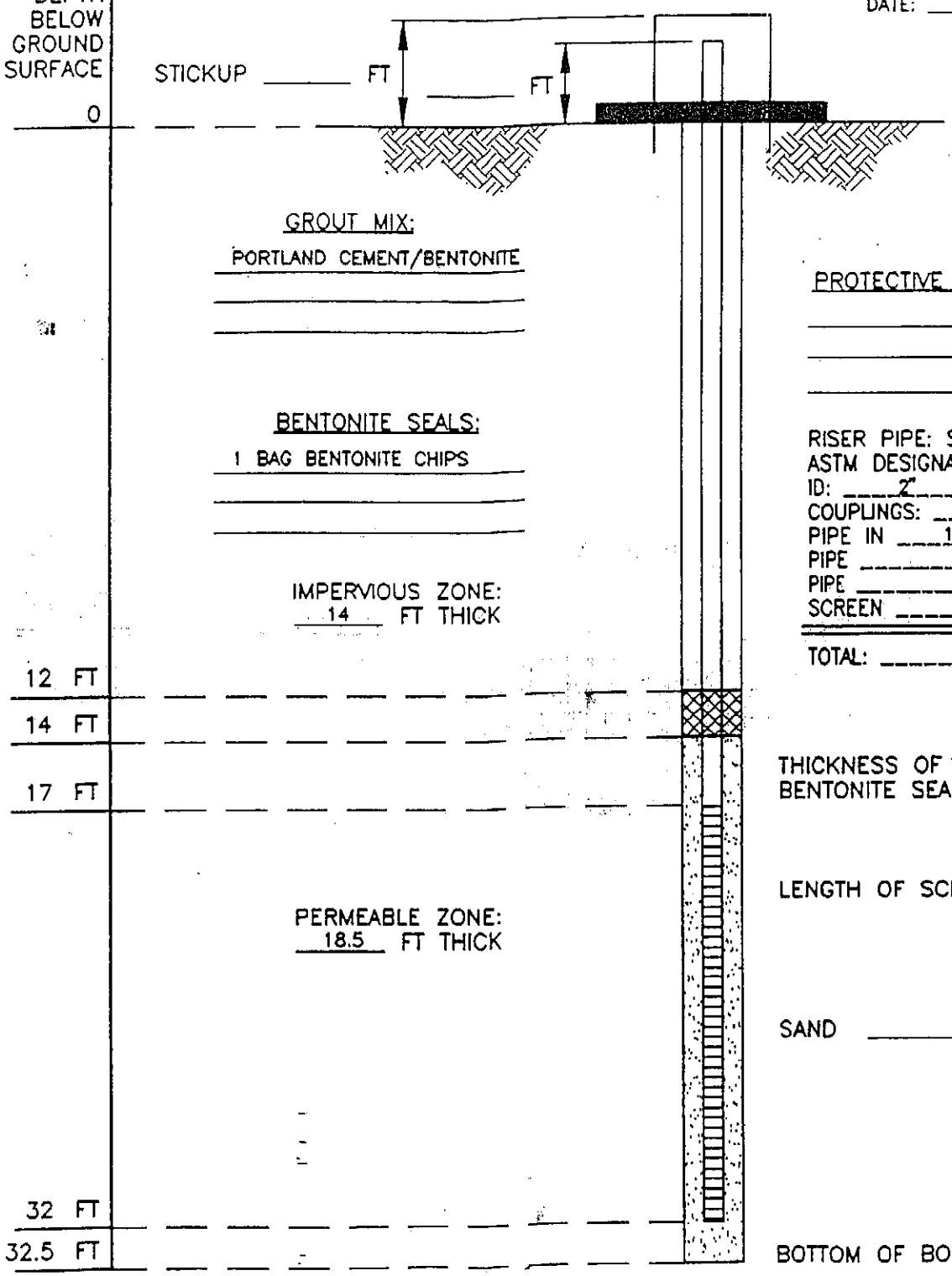
SIGNATURE OF CONTRACTOR OR AGENT — DATE 9-13-94

GS-1

Submit original to Division of Environmental Management and copy to well owner.

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-11-8
BORING NO.: 11-8
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE: _____



RISER PIPE: SCHEDULE 40
ASTM DESIGNATION: _____
ID: 2" OD: _____
COUPLINGS: THREADED FT
PIPE IN 10 FT. LENGTHS
PIPE 2-10 FT
PIPE _____ FT
SCREEN 15.0 IN

TOTAL: 35.0 FT

THICKNESS OF BENTONITE SEAL 2 FT

LENGTH OF SCREEN 15 FT

SAND 18.5 FT

HDR

HDR Engineering, Inc.

REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

COMPLETION REPORT OF WELL No. II-12

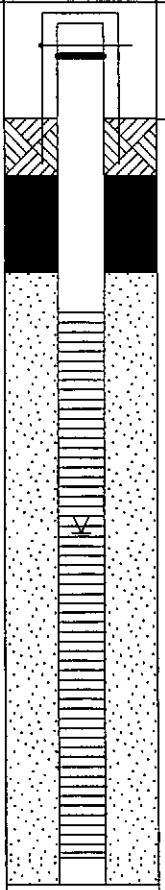
PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

WATER LEVEL:

LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **M. Moseley**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **3/22/05**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)
Fill: Asphalt Debris - 2"		0
Tan Slightly Clayey Fine Sandy **SILT**		
Alluvium: Gray Green Very Clayey **SILT** (Moist)		5
Possible Alluvium: Green Coarse Sandy Clayey **SILT** (Saturated)		10
Residuum: Gray Coarse to Fine Sandy Clayey **SILT**		15
Partially Weathered Rock: sampled as Gray Coarse to Fine Sandy **SILT**		20



DEPTH (ft.)	LEGEND	ELEVATION (ft.)
0.00	GS	
0.00	CG	
1.50	BS	
4.10	FP	
5.20	TSC	
19.70	BSC	
20.40	TD	

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+2.5-5.2**

GROUT
Type: **Neat Cement Grout**
Interval: **0-1.5**

SEAL
Type: **Bentonite**
Interval: **1.5-4.1**

FILTERPACK
Type: **#2 Sand**
Interval: **4.1-20.4**

SCREEN
Diameter: **2"**
Type: **0.010**
Interval: **5.2-19.7**

LEGEND

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

MONITORING WELL 1584-98-081 WHITE STREET LANDFILL.GPJ S&ME.GDT 4/18/05

S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES
3718 Old Battleground Road
Greensboro, NC

COMPLETION REPORT OF WELL No. II-12

PROJECT: GREENSBORO SOLID WASTE LANDFILL PROJECT NO: 6770-021-018

LOCATION: WHITE STREET, GREENSBORO, N.C. BORING NUMBER: MW-13 PAGE: 1

BORING LOG DATE: 1/6/93

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
SS-01 SS-02	4' 8' 12' 16' 20' 24' 28' 32'	53 82+	SS SS			0-1.0' TOPSOIL; 0-0.5' THEN ORANGE SLIGHTLY SANDY SILT 1-2.5' ORANGE CLAYEY, MICACEOUS SANDY SILT; 1.5-2.5' VERY HARD, BROWN AND BLACK SLIGHTLY SANDY, SLIGHTLY CLAYEY SILT, PARTIALLY WEATHERED ROCK 3.5-5.0' BROWN AND BLACK, FINE-GRAINED SLIGHTLY SANDY SILT, VERY HARD PARTIALLY WEATHERED ROCK AUGER REFUSAL AT 5.0' MUD ROTARY DRILLING 5.0-18.5' BG CORE DRILLED FROM 18.5-32.5' OBTAINED 14.0' OF NX CORE	SAPROLITE PARTIALLY WEATHERED ROCK BEDROCK
	36' 40'					TD = 32.5'	

BOREHOLE COMPLETION:

WATER DEPTH: DATE:

DRILLING METHOD: 6 1/4" HOLLOW-STEM AUGER, TRICONE BIT

LOGGED BY: CHARLES G. LEE, PG

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

SEP 21 1994

HDR
CHARLOTTE, N.C.

WELL COMPLETION LOG

LOCATION: GREENSBORO N C WORK ORDER #_____

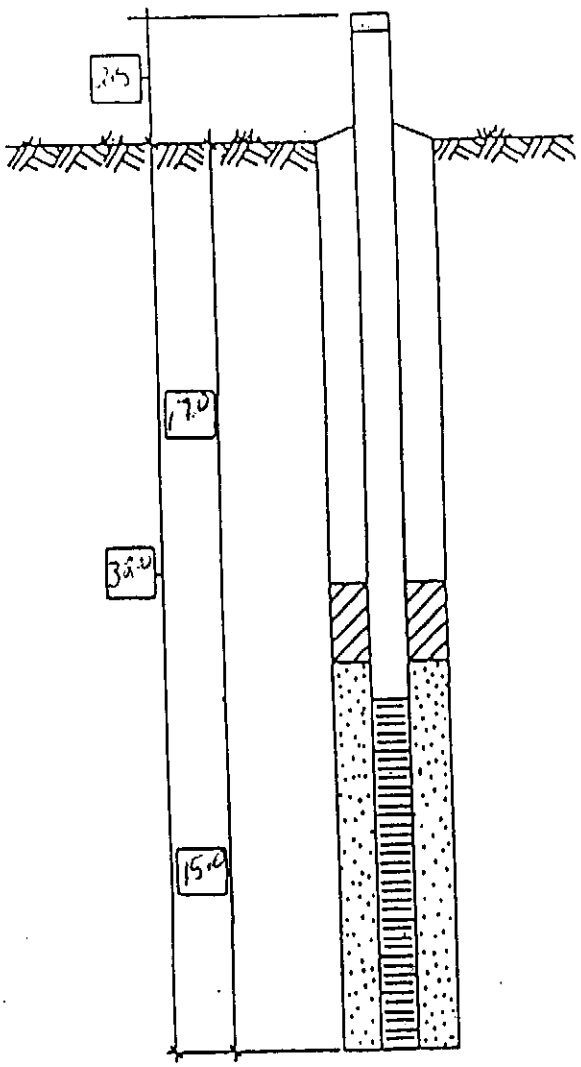
WHITE STREET LANDFILL

CLIENT: HDR DATE 9-12-94

WELL NUMBER: MW-14 CONTACT: CHARLIE LEE

INSTALLED BY: CEES AIKEN

OTHER SERVICES PERFORMED: _____



___FLUSH MANHOLE

✓ABOVE GRADE PROTECTOR

___NONE

CONCRETE 3 BAGS

CEMENT GROUT ___ BAGS

RISER - TYPE SCH 40 PVC

SIZE 2"

BENTONITE 1 by 1 HOLE PLUG

SCREEN - TYPE SCH 40 PVC

SIZE 2" .010 SLT

FILTER TYPE #2

DEVELOPMENT: BAILED___, PUMPED___, AIR LIFT___, SURGE___, SWAB___, NONE___

TOTAL TIME: _____ TOTAL GALLONS: _____

WATER APPEARANCE: START _____ FINISH _____

MW-14

NORTH CAROLINA DEPARTMENT OF NATURAL RESOUCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT-GROUNDWATER SECTION
P.O. BOX 27687-RALEIGH, NC 27611 PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR: BADGER DRILLING
DRILLER REGISTRATION NUMBER: 1486
STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: GREENSBORO N.C.
(Road, Community, or Subdivion and Lot No.)
County:

2. OWNER:
ADDRESS: Street or Route No. City or Town State Zip Code

3. DATE DRILLED: 9-12-94 USE OF WELL: MONITORING

4. TOTAL DEPTH: 32.0 CUTTINGS COLLECTED: ✓ Yes _ No

5. DOES WELL REPLACE EXITING WELL? _ Yes ✓ No

6. STATIC WATER LEVEL: ____ FT. Above Below TOP OF CASING,
TOP OF CASING IS: 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST: AIR

8. WATER ZONES (depth): N/A

9. CHLORINATION: Type N/A Amount

Depth From	Depth To	Drilling Log Formation Description

10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
From	2.5 AGV	17.0 Ft.	2"	SCH 40	PVC
From		To Ft.			
From		To Ft.			

If additional space is needed use back of form.

11. GROUT:

	Depth From	Depth To	Material	Method
From	0.0	13.0 Ft.	PORTLAND - BENTONITE	SLURRY
From		To Ft.		

12. SCREEN:

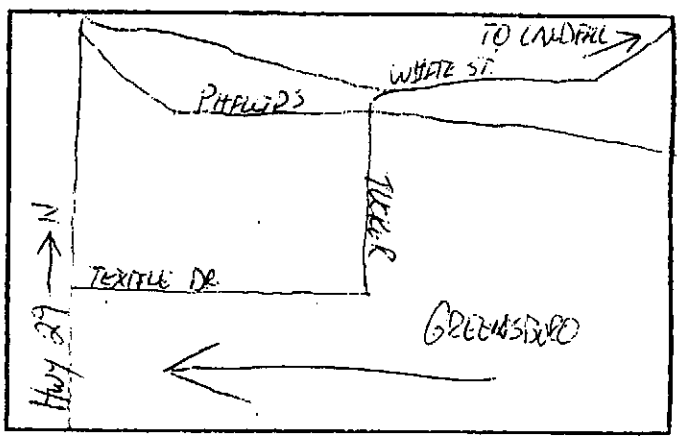
	Depth From	Depth To	Diameter	Slot Size	Material
From	17.0	32.0 Ft.	2" in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
From	15.0	32.0 Ft.	#2	
From		To Ft.		

14. REMARKS: BENTONITE SEAL 13.0' to 15.0'

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points).



I DO HEREBY CERIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT — DATE 9-12-94

GS-1

Submit original to Division of Environmental Management and copy to well owner.

PROJECT: WHITE STREET LANDFILL | PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. | BORING NUMBER: B-14 MW-14 | PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'						
SS-1		7-7 9-12	SS			RED ORANGE SL. SANDY, CLAYEY SILT, EQUIGRANULAR.	GRANITIOD
	8'					DK. RED COARSE SANDY CLAYEY SILT EQUIGRANULAR TO 10.5, THEN RED ORANGE-TAN, SL. MIC. SILT, TR. SAND WEAKLY FOLIATED GRANTIOD QNEISS, ~10% QZ, OCC BLACK VEIN.	GRANITIOD GNEISS
SS-2		4-5 5-4	SS				
	12'						
SS-3	16'	4-6 6-8	SS			RED ORANGE MIC. CLAYEY SILT TO FOLIATED TAN ORANGE SL. MIC. SANDY SILT TO FG YELLOW BRN SILT W/BLACK Mnox FRACT.	
	20'						
SS-4		6-6 5-6	SS			YELLOW BRN FINELY FOLIATED CLAYEY SILT, LIL Fe Ox, Mnox FRACT.	INITIAL WL @ 20.0' SCHIST.
	24'						
SS-5		2-5 5-6	SS			FOLIATED YELLOW BROWN FOL. SILT AS ABOVE TO 25.4 THEN WHITE AND BRN SPOTTED SL. SANDY EQUIGRANULAR SILT, T. MICA	GRANITE
	28'						
SS-6		5-10 12-15	SS			AS ABOVE, GRANITE	GRANITE
	32'					EOH @ 32.0'	
	36'						
	40'						

BOREHOLE COMPLETION: 32.0' BELOW GRADE

WATER DEPTH: ~ 20.0' DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

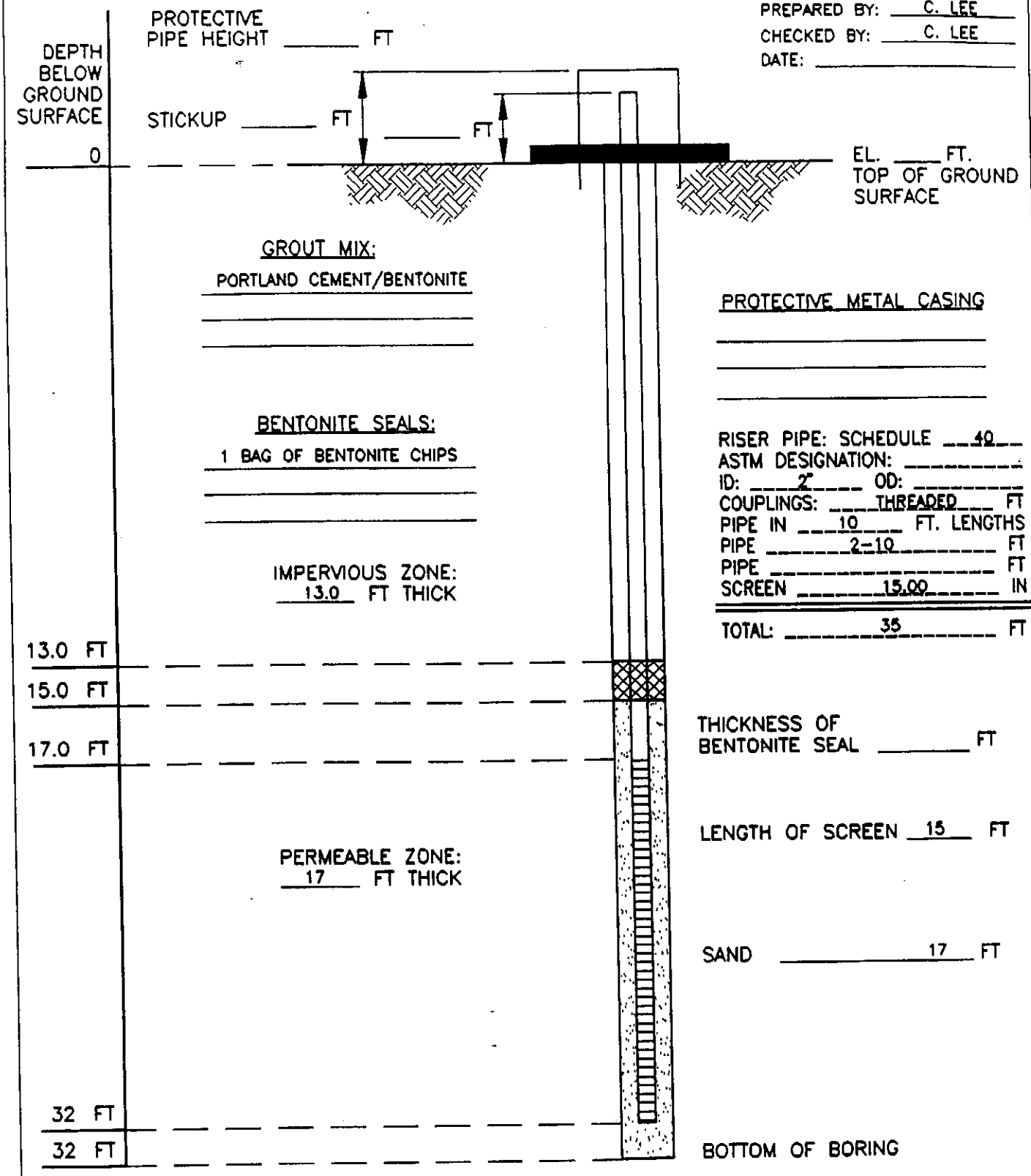
LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-14
BORING NO.: B-14
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE: _____



HDR

HDR Engineering, Inc.

REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

S&ME
ENVIRONMENTAL SERVICES · ENGINEERING · TESTING

3718 Old Battleground Road
Greensboro, North Carolina 27410
Phone: (336) 288-7180
Fax: (336) 288-8980

LETTER OF TRANSMITTAL

Date: 12/14/07

Project Number: 1584-98-081

From: Connel Ware

To: **North Carolina Department of Environment and Natural Resources**
401 Oberlin Road

Suite 150

1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Copy to: **Chris Marriott**

Environmental Services Department
City of Greensboro
White Street Landfill
2503 White Street
Greensboro, NC 27405

Attention: Ms. Jackie Drummond

Subject: **White Steet Landfill**
Revised Water Quality Monitoring Plan
Phase I and II Areas

Transmitted via
First Class Mail [ ] **Overnight Express** [X] **Hand Delivery** [ ] **Other**

Remarks:

Jackie,
The Revised Groundwater Monitoring Plan for Phase I, and Phase II Areas of the White Street Landfill is included with this Transmittal Letter. Call me if you have any questions or need any additional information.

-Connel Ware